RADC-TDR-63-236

APPLICATION OF COLOR VISION TO TWO-COLOR MIXTURES FINAL REPORT

23 AUGUST 1963

CONTRACT # AF30(602)-2635
F-2022-1

PREPARED FOR

ROME AIR DEVELOPMENT CENTER
RESEARCH AND TECHNOLOGY DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
GRIFFISS AIR FORCE BASE
ROME, NEW YORK

APPLIED RESEARCH LABORATORY

SYLVANIA ELECTRONIC SYSTEMS
Government Systems Management
for GENERAL TELEPHONE & ELECTRONICS

RADC-TDR-63-236

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APPLIED RESEARCH LABORATORY
SYLVANIA ELECTRONIC SYSTEMS
A division of Sylvania Electric Products Inc.
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ABSTRACT

Data was collected on two-color mixtures to evaluate the effects of photographic filters (i.e., densities of corresponding pairs on two slides) and projection filters on perceived hue and saturation

The first part of the program employed broad band filters. Three slides were combined factorially, yielding slide pairs. Each of these pairs was projected through nine filter combinations. Subjects judged the hue and saturation of nine stimulus chips. It was found that some but not all pairs of projection filters yielded a full range of color and further, that classical color mixture theory was adequate to explain the perceived colors if consideration was given to the induction of the complement of the background color.

The second part of the program employed narrow-band filters. Fifteen pairs of slides were combined factorially with twenty-seven pairs of projection filters and seven conditions of ambient illumination. As with the broad band filters, it was found that some but not all filter combinations produced a full range of color. However, classical color mixture theory was not adequate to explain all the perceived hues.

Finally, a portion of the data was used to evaluate the model of color perception proposed by Yilmaz (1962).

F-2022-1

Title of Report RADC-TDR-63-236

Application of Color Vision Theory to Two-Color Mixtures

PUBLICATION REVIEW

This report has been reviewed and is approved.

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Chief, Human Engineering Laboratory
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Director of Engineering

FOR THE COMMANDER:

IRVING J. GABELMAN
Director of Advanced Studies

SECTION 1
INTRODUCTION

1.1 OBJECTIVES

1.1.1 Systematic and Quantitative Investigation of Two-Color Mixtures

A primary goal of this contract was the thorough investigation of some of the more important variables affecting two-color mixtures. In selecting the variables, consideration was given to the second goal of the contract, namely, the evaluation of the Yilmaz (1962) model for color perception. Thus, the variables selected were expected, on the basis of previous research, to affect two-color mixtures and to provide data which would allow an estimate of the validity of the Yilmaz model.

From an original set of six variables the following four were selected:

a) Wavelength of maximum transmission of the filters through which the transparencies were photographed.

b) Wavelength of maximum transmission of the filters through which the transparencies were projected.

c) Ambient illumination.

d) Transmission bandwidth of filters used in photography and projection.

To determine the effects of these variables, upon the perception of two color mixtures, eleven Munsell chips were selected as stimulus material. These eleven chips, however, included one white and one black chip which were used only as references in the photographic procedure. Subjects were required to respond to these nine chips in terms of Munsell hue and saturation, and these responses (converted to CIE coordinates) were then compared with the coordinates of:

a) the actual Munsel chip photographed, and

b) the colored squares as they were projected.

In this manner it was possible to examine the extent to which the original chip's* hue, and saturation were reproduced and the relationship between the physical stimulus on the screen and the hue and saturation perceived by the subject.

By these same procedures information was obtained which would allow an evaluation of the various parameters of the model of color perception proposed by Yilmaz (1962).

The two succeeding sections describe, in turn, past research on two-color mixtures and the Yilmaz model of color perception.

1.2 HISTORY OF TWO-COLOR MIXTURES

1.2.1 Early Work

The first recorded two-color mixture appears to be that of Louis Ducos du Hauron in 1895 (Wall, 1925). He describes the production of "a colored sensation as complete as the trichromatic images" which was obtained using only red and blue pigments (the yellow pigment which he had been using in his three-color separation work was eliminated). This phenomenon was restricted in the sense that it could be observed only under weak daylight or by yellow light such as that obtained from candles, whereas for three-color mixtures the optimum viewing condition was bright daylight.

This work of du Hauron was followed, after the turn of the century, by a patent granted to Fox, Hickey, and Kinemacolor (1914) for a two-color process in which pictures were taken through red and green filters and the red record was projected through a red filter while the green record was projected with no filter. Work on two-color systems seems to have died out with the development of Kodachrome

*The word "chip" as used in this report will refer to the Munsell chip actually photographed while the word "stimulus" will refer to the various projected spectra to which the subjects responded.

(Mannes and Godowsky, 1924). The work on two-color systems in the early part of the century is summarized in Wall (1925).

1.2.2 Recent Work

In 1959 Land published descriptions of extensive investigations of two-color mixtures (Land, 1959 a, b, and c) employing the following procedure (Land, 1959 a)...

> "... two black and white photographic positive transparencies are made in a split-beam camera ... One is taken through a Wratten No. 24 filter, passing wavelengths longer than about 585mμ and one through a Wratten No. 58 filter, passing wavelengths shorter than about 585mμ. These two photographic records will be referred to as the 'long record' and the 'short record' respectively. The picture is exposed so that the gray scale appears to have the same densities on both records.
>
> "The two records are then projected ... and superimposed exactly ... In front of each lens is a pair of polarizers mounted so that the intensity of the light in each beam can be varied separately. In projecting, the long record is projected ordinarily through a red filter (Wratten No. 24) and the short record through a neutral density filter of about 0.3 (when the polarizers are not being used). The half of the projector containing the long record will be referred to hereafter as the 'long projector,' and the other as the 'short projector.'"

Employing the procedure described above, a full range of color was obtained including yellow (blond hair), blue, red, blue-green, and flesh tones. It was also demonstrated that there is no appreciable time lapse in the appearance of "full-color," that these colors can be observed in white ambient illumination, and that the range of color perceived is independent of the visual angle subtended by the stimulus. It should be noted that all of these phenomena were demonstrated in a qualitative manner and it seems extremely unlikely that,

for example, the independence of color on visual angle would hold at extreme values. (Land, 1959 a experiments 1-7.)

By placing the red filter over the "short record" and no filter on the long record (experiment 8) Land (1959 a) demonstrates that the colors perceived are not dependent on the subjects expectations. With this procedure subjects report blue-green lips, green hair, and similar color reversals.

In experiment 10, Land (1959 a) varied the intensities of each record relative to the other and found "that the ratio of stimuli can be varied enormously - with some pairs of stimuli by ratios as high as 100 to 1 - without altering the color name given to each one of the objects."

Land, in experiments 12-14 (1959 a) also demonstrated that although changes in projection filters alter the backgrounds slightly, the stimuli remain constant with respect to color.

Land (1959 a, b and c) concluded from the above described demonstrations (plus others which seem less relevant to the present investigation) that color perception could not be described as a function of the wavelengths of the energies impinging upon the visual receptor mechanism and that a new coordinate system was required to describe color-vision with "natural images," as opposed to a stimulus spot in a uniform surround. This conclusion (that classical color theory was inadequate to explain the phenomena described above) has been examined in detail by Woolfson (1959), Judd (1960), and Walls (1960). These authors concluded that, if consideration is given to the phenomena of "color constancy," (the discounting of the color of the illuminant in judging the color of objects) and simultaneous and successive contrast, (the induction of the complement of a color in a neutral area adjacent to a chromatic area) the phenomena reported by Land (1959 a, b and c) can be largely explained within the framework of classical colorimetric theory. To illustrate this point, the following example is quoted from Walls in reference to two-color mixtures (Walls, 1960 p. 35):

"When a surround is mixed from two beams of light they may both be colored or, e.g., red and tungsten 'white,' and in either case the mixture will tend to be seen as white in consequence of general chromatic adaptation. But the red-light content acts as if it were alone, in causing lateral adaptation of the retinal area subtending the spot. Truly white light in the spot would now appear white-minus-red, i.e., blue-green. But, if the spot light itself is a little reddish, some of its direct redness can combine with the induced greenness and a little of the blueness to give a basis for neutrality, and the remaining direct redness and induced blueness will make the spot purple."

As a final example, consider the case of two colored spots (red and green) photographed with red and green filters and projected with a red filter (long record) and no filter (short record). The red spot is represented by a high transmission on the long record (red filter) and a low transmission on the short record (no filter) and thus is seen as red. The green spot, on the other hand, is represented by a low transmission on the long record (red) and a high transmission on the short record (no filter or "white" light) and thus is represented on the screen by "white" light. This "white" spot however is perceived as a blue-green due to simultaneous contrast produced by the surround which is a mixture of approximately equal amounts of red and white light, and hence is more red than the spot.

In evaluating the results of the present investigation, then, the predictions based on classical color theory will include those resulting from "color constancy" and contrast effects.

Land's demonstrations and papers (1959 a, b and c) stimulated a number of investigators to attempt to replicate the phenomenon and when successful replication was achieved to examine the effects of other unexplored variables on the range of colors perceived in two-color mixtures.

Berg and Forkner (1960) used both "natural scenes" and a display of square stimulus spots as subject material. They found that the perceived colors were those of the filter (in the single filter projections), its approximate complement, and shades adjacent to these two colors (which, however, were considerably less saturated). The colors observed were predictable from classical two-color mixture laws, if it was assumed that the complement of the filter hue had been induced. When the two records were projected, using two filters, both the number and saturation of the colors perceived were dependent on the wavelength separation of the projection filters.

Adaptation (the induction of the complement of the projection filter) was used by Hughes (1960) to predict the colors perceived when a "natural scene" was photographed through red and green filters. When this scene was then projected with green and red filters over the short and long projectors those colors predicted by classical theory (red, yellow, and green) were observed. When the long record was projected through a red filter and the short with "white" light, reds, yellows and desaturated blue-greens were seen. Similarly predictable colors were perceived with various other filters. Predictions were made on the basis of a shift in the neutral illumination point toward the filter color in accordance with color constancy. Complements of the projection filter color were then induced in areas darker than this shifted neutral point.

Bivens (1961) examined the relationship between the difference threshold for hue and the minimum separation of projection filters to produce "good" two-color mixtures (Hecht's data were used for the difference thresholds and Land's for the two-color mixtures). The data showed a close relationship between the two variables. For a good two-color effect the filter separation must be about ten times as great as the difference threshold in that region of the spectrum.

Comparisons among two-color projections, three-color projections, and actual stimulus material with respect to quality and fidelity

were made by Burckhardt and Strutt (1961). They found little difference between stimuli projected with red and green filters and those projected with a red filter and incandescent light ("white"). Both of these, however, were inferior to the projections of a three-color system with respect to both quality and accuracy of judged color.

Rushton (1961) found that Grassman's laws hold for three-color matches of two-color projections Two-color projections were through a red filter (long record) and no filter (short record). A three-color match made to such a two-color mixture was equal to the sum of two separate three-color matches made to each of the components of the two-color mixture (i.e., red and "white"). This three-color match was found to hold, independent of any reported changes in the hue of the stimulus (i.e., changes due to contrast effects). The two-color system was found to leave more colors unrepresented than represented.

Interest in the anatomical locus of two-color mixtures effects has led to attempts to produce this phenomenon with presentation of the two components to the two eyes separately. Pastore (1960 a and b) found that in addition to two-color mixtures being producible with binocular stimulation, simultaneous contrast effects could also be produced with black and white drawing which were capable of being fused. When fusion occurred while a red filter was over one eye simultaneous contrast effects were reported. Geschwind and Segal (1960) found that a "full range of colors" was obtainable when the two records were presented to two different eyes simultaneously. The authors concluded that the "Land effect" must either take place, at least in some cases, at some level higher than the retina, or there must be some effect of stimulation of one retina, through higher centers, on the sensitivity of the other retina.

In addition to the studies reported above, consideration has been given to the implications of two-color mixtures for color television by Hirsch (1960); attempts (unsuccessful) to induce Fechner Colors in black and white photographs (Brown, 1960) and numerous

"popularized" discussions of the "Land effect" (Bello, 1959; Campbell, 1960). Such publications have not been discussed here either because they do not seem relevant or because the information presented would have been redundant.

1.3 THEORETICAL CONSIDERATIONS

It is well known that colors perceived by the human eye can be ordered in hue on a closed curve. The so-called color wheel or color triangle are special examples. In other words, there is a correspondence between the points on a closed curve and the various hues perceived by the human eye. Physicists order the visible spectrum simply in terms of wavelengths on a linear scale, but this ordering is not circularly closed. That wavelength ordering and color perception ordering are fundamentally different becomes apparent from the following observations: The mixing of a color with its so-called complement produces a color perceived to have no hue (black-gray-white). This is unexplainable from the point of view of a linear ordering of wavelength. Also, the color of a small area illuminated by a given wavelength may be seen to differ depending upon the colors of the surrounding objects. In other words the color of a light sample actually perceived is subjective and largely relative whereas a physical ordering is absolute. The eye does not function like a simple spectrum analyzer, but transforms the information contained in the light distribution of a scene into a different representation which we call color. It is therefore preferable to treat color as a non-physical phenomenon in its own right and proceed from experimental facts in which the colors actually perceived by the eye are taken as fundamental.

The purpose of this section is to provide a simple theory of color transformation emerging from such direct observations. This theory explains the main features of the recent color photographs of Edwin H. Land, (1959 a) as well as the classically known behavior of colors under various illuminants and various viewing conditions. The

theory is based on pertinent simple experiments and the results of previous observers. It is constructed around a simple geometrical model and its main features are embodied in a set of transformations similar or analogous to the Lorentz transformations of special relativity. It is a phenomenological theory.

Most of the background information used to build the theory is well known, although the interpretations given here are unique. The principle that object-colors remain invariant under various illuminations, and that for each illumination there exists a reference point (level of adaptation), is due mainly to Helson, (1938). Helson was also the first investigator to point out that it is impossible for the eye to accept a single-frequency (monochromatic) source as an illuminant for satisfactory object-color rendition. Our theory emphasizes the invariance of color interrelationships between a set of color samples in a field of view rather than the invariance of individual object colors independent of other objects. However, the approximate constancy of object color is also predicted by the theory.

The effects of neighboring colors on a given light sample were investigated by various workers. This so-called contrast enhancement usually is treated as a separate phenomenon. The theory illustrates the close connection between this and the transformation under change of illuminant (adaptation). In fact, colored shadow effects and color illusions also follow from the same transformation. From our point of view contrast enhancement is essentially a consequence of the transformations as are most other color phenomena.

The starting point for the development is a geometrical model, which, for the sake of simplicity and clarity, is introduced in an idealized (or approximate) form. Linear coordinate transformations (of the Lorentz type) are fundamental to the theory in the manner in which they are fundamental to the special theory of relativity. Contrast enhancement follows as a consequence of the transformations; it is manifested as a shift of the achromatic axis to a point

representing the average of the values of the various light samples reaching the eye. A kind of relativity in color vision -- the final factor of the idealized model is encompassed in a shift of the origin necessary to preserve invariance of color relationships under a change of illuminant.* This idealized model can then be applied to describe Land's two-color projections. Finally, a more realistic model based on experimental data which starts with the C.I.E. tristimulus functions and which refines some of the idealizations assumed in the previous model has been introduced.

For the sake of convenience we have adopted a Munsell-like coordinate system. In this system the color matching experiments may be described in terms of the three variables ϕ, ρ, and γ of a cylindrical coordinate system (Figure 1). The three psychological attributes of object-color perception are then assumed to have a correlation with these variables as

$\phi \rightarrow$ Hue

$\sigma = \rho/\gamma$

$\gamma \rightarrow$ Lightness

$\Sigma \rightarrow \sigma_{max}$ = Maximum Saturation

Any vector $\vec{OF}$ (Figure 1) in our color space represents a particular color. The origin 0 corresponds to an object from which no light comes to the observer, i.e., to black. The γ-axis represents all shades of gray from black to white. Since the lightness of any light sample is positive definite, $\vec{OF}$ always has a positive γ-component. Furthermore, for each hue there is a maximum attainable saturation, usually identified as spectrum saturation. It follows

*This shift is with coordinates ξ, η, ζ such as to preserve the length of the vector representing the object in the transformation from old to new coordinate system, since the vector (magnitude and direction) describes the objects color.

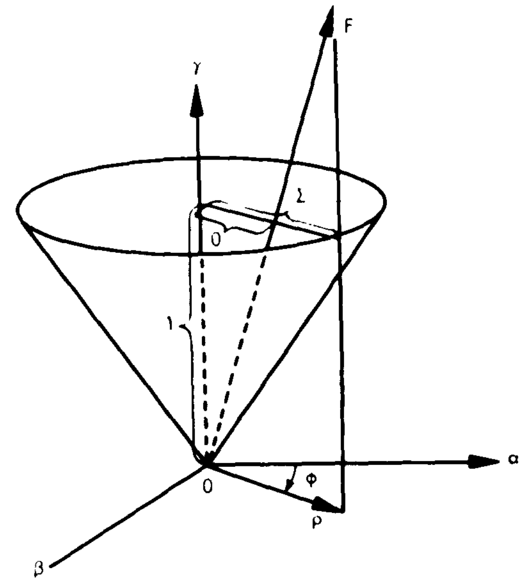

Figure 1. Light Samples (Colors) May be Represented as Vectors in a Three Dimensional Cylindrical Space

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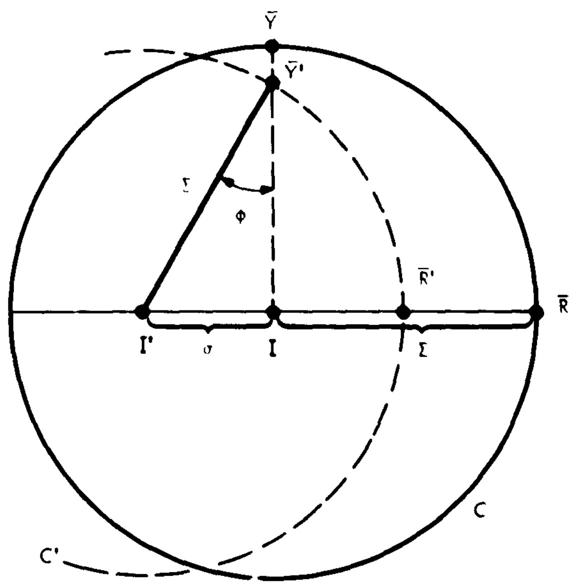

Figure 2. From One Illuminant to Another the Limiting Saturation Σ Remains Almost Unchanged

that each vector, $\vec{OF}$, be inside a cone of maximum saturation, $\Sigma = \sigma_{max}$, and according to its orientation relative to the γ-axis it describes the hue and saturation of a particular color.

Natural illuminants are neither of single frequency, nor even highly selective. Since the eye has evolved under natural conditions, the illuminants of greatest interest are those of only moderately selective spectral distribution. Such a source may have more or less preponderance of energy in a given wavelength region, and be called bluish, yellowish, reddish, and so on, but will never approach maximum purity. That a highly-selective or monochromatic source yields unacceptable object-color perception was pointed out by Helson (1938).

For the sake of simplicity an idealized coordinate system is used in initial interpretation. Let the angle $\phi(\lambda)$ represent the hue variable for a <u>given</u> illuminant. We can define a three dimensional space by the orthonormal functions

$$\bar{\alpha} = \frac{1}{\sqrt{\pi}} \sin \phi \qquad \bar{\beta} = \frac{1}{\sqrt{\pi}} \cos \phi \qquad \bar{\gamma} = \frac{1}{\sqrt{2\pi}} \tag{1}$$

In this space a spectral function $F(\phi)$ (the intensity versus wavelength distribution of an object) may be represented as a vector

$$F(\phi) = \alpha\bar{\alpha} + \beta\bar{\beta} + \gamma\bar{\gamma} ,$$

$$\alpha = \int_0^{2\pi} F(\phi)\bar{\alpha}\, d\phi, \quad \beta = \int_0^{2\pi} F(\phi)\bar{\beta}\, d\phi, \quad \gamma = \int_0^{2\pi} F(\phi)\bar{\gamma}\, d\phi \tag{2}$$

where α, β and γ correspond roughly to Red-Green, Blue-Yellow and Black-White values of an opponent-colors system such as the one proposed by Herring. Thus, in this space the color, F, corresponding to a patch of spectral radiance may be represented as a vector

$F(\phi)$ evaluated as a function of the hue angle on which the wavelength is mapped.*

Since F is positive definite (radiant flux) the space spanned by α, β, γ may be described as in Figure 1 where any vector F has a positive γ-component and lies away inside a <u>limiting cone</u> given by

$$\alpha^2 + \beta^2 = \Sigma^2 \gamma^2 \tag{3}$$

Also

$$\sigma = \frac{1}{\gamma} \sqrt{\alpha^2 + \beta^2} , \tag{4}$$

which for a spectral color reaches a maximum Σ. Thus the cone defined by (3) describes the limiting case of highest saturations.

The plane $\gamma = 1$ intersects the cone at a circle (Figure 1). This circle may be taken as a chromaticity diagram or color circle in this idealized system.

The coordinate system and color specifications described above work for a given illuminant. If the illuminant changes, we know that the color identifications of a given light sample, F, change. We may interpret this as a transformation of the coordinates α, β and γ into the new coordinates α', β', and γ'. It follows that the functions $\bar{\alpha}$, $\bar{\beta}$, and $\bar{\gamma}$ must also change so that the relationship (5) holds

$$F(\phi) \quad \alpha'\bar{\alpha}' + \beta'\bar{\beta}' + \gamma'\bar{\gamma}' . \tag{5}$$

*Note that $F(\phi) = \alpha\bar{\alpha} + \beta\bar{\beta} + \gamma\bar{\gamma}$ is the lowest three terms of Fourier expansion. A given function, $F(\phi)$ will in general contain higher Fourier terms but we are restricting ourselves only to the first three terms as the color space of normal human vision is three dimensional. If some exceptional human beings sense some higher terms, the color space of these individuals would be said to have a higher dimensionality.

The transformation formulae which are at the crux of this theory may be summarized simply as follows:

In the α-β or color plane, Figure 2, the transformation appears as a shift of origin from I to I'. In three dimensions (color plus lightness) it is a rotation, linear distortion, and translation (point O is translated to O', in Figure 3). In fact, if α and β are identified with the spatial dimensions, x and y, for example; and γ identified with time; Σ with c, the velocity of light; and σ with v, relative velocity, where $v < c$; then the transformation is analogous to the Lorentz transformations of special relativity plus a translation; i.e., the relativistic or Fitzgerald-Lorentz contraction $\sqrt{1 - v^2/c^2}$ becomes

$$\sqrt{1 - \frac{\sigma^2}{\Sigma^2}} \tag{6}$$

(Σ the maximum saturation, may differ in different hue directions, for example, at high intensities, the so-called Bezold-Brucke phenomena).

The form of these transformations allows us to regard color as a relative phenomenon. Invariance of color relationships under a change of illuminant then expresses a kind of relativity in color vision. To each illuminant there corresponds a coordinate system, and the equivalence of these systems due to the existence of certain transformations indicates that any illuminant is just as good as any other.

If small areas of light have different values of coordinates α_i, β_i and γ_i in a given coordinate system, then, in a room illuminated with the same wavelength covering large area, they will each be described by the appropriate transformation with respect to a mean coordinate system which is obtained by averaging the illumination over the room.

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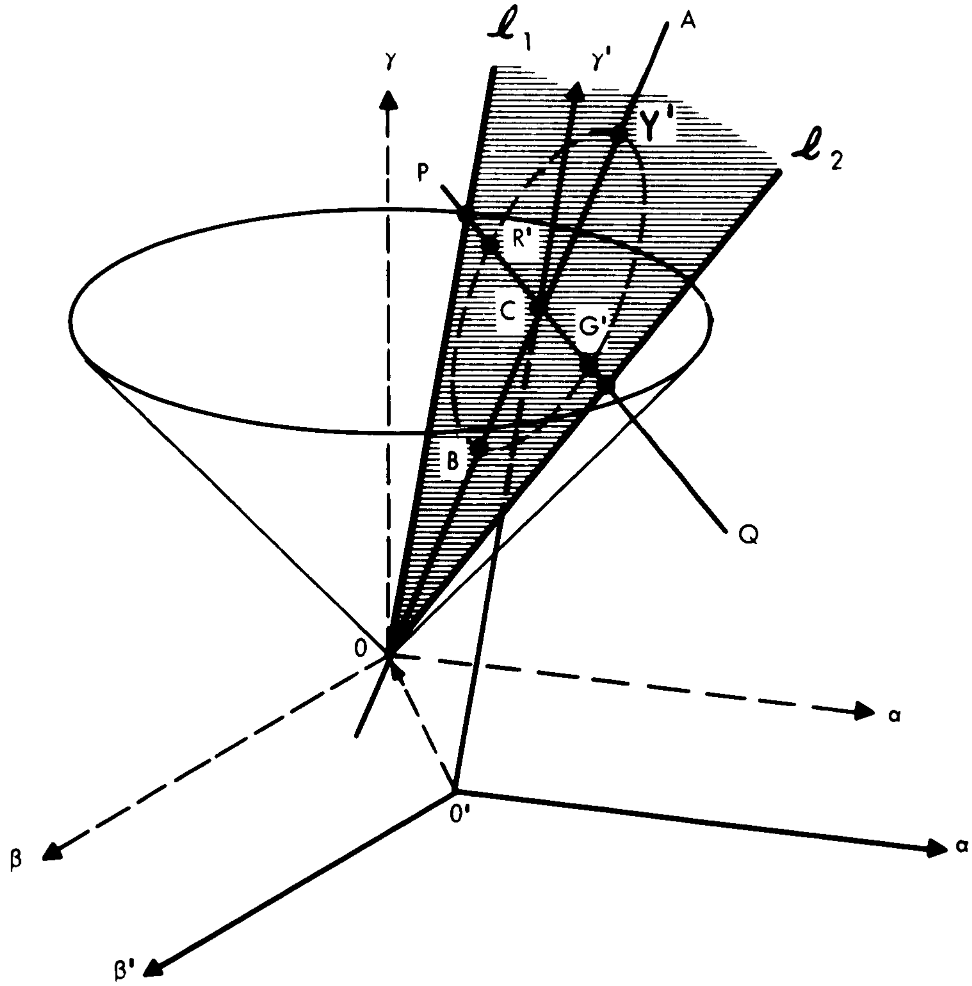

Figure 3. All Hues May be Generated by a Two-Color Projection. But Then If the Hue and Saturation of a Color are Given, Its Lightness Cannot be Arbitrary

A simple special case of this is the projection of a screen not covering the whole visual field. In that case the rest of the room is dark and the summation is extended to the area of the projected scene. This special case has an interesting application in connection with the recent two-color projections of Edwin H. Land (1959 a). Furthermore, the shift of the origin is also necessary to explain certain of the two-color effects.

Let two-color separation positives of a natural scene, one taken through a red filter, the other through yellow-green, be projected with their respective filters in exact registration. On the screen the colors of the original scene are observed in their proper places. The colors of the objects depicted on the screen are perceived generally in correct hue and lightness order, but the saturations are distorted in a characteristic way. Let the saturations corresponding to our filters be σ_1 and σ_2. In terms of the coordinate α, β and γ they would be described as the straight lines ℓ_1 and ℓ_2 (Figure 3). Therefore all possible light samples producible this way fall on the shaded plane area $\ell_1 0 \ell_2$. Judged from this original coordinate system these light samples would appear as the various mixtures of red and yellow-green. But the eye does not function that way; the origin 0 is shifted to 0' and the achromatic axis 0γ is tilted to $0'\gamma'$. 0' is determined by averaging over the field of view. The net result is that from the new reference system light samples spanning the shaded area will now appear to have all hues. However, all possible colors are not generated since very bright blues and dark oranges will be missing.* This is because the equation of the plane may be written

$$A\alpha' + B\beta' + C\gamma' + D = 0 \tag{7}$$

so that if the hue and the saturation of a sample on this plane are given, its brightness cannot be arbitrary.

*The ideal model predicts a grey of one particular lightness, but does not predict white.

The form of Equation (7) is invariant under the transformations. In other words if new transformations are induced by turning on the lights of the room or by providing contrast and surround with the help of other colored areas and scenes, the appearance of a given image will remain practically the same. This is because along with the equation of the plane, the mutual interrelationships of its points will also remain invariant in form so that the color classifications of the objects within the image will be preserved. This leads to an important conclusion first expressed by Land that "different color worlds can coexist side by side or one within another."

The explanation of the range of colors producible by various pairs of wavelengths (Land's color map of the eye) follows from similar considerations. For example if ℓ_1 and ℓ_2 are parallel or if they are in the same plane with $O'\gamma'$ the range of colors will be restricted (these are the cases of parallel and anti-parallel hues on a chromaticity diagram). Also if we always use the same pair of separation positives and vary only the wavelengths, we see that there will be a reversal of colors around the wavelength corresponding to blue, since this is where shorter wavelengths start getting a reddish hue which originally belonged to very large wavelengths. Comparison of these and various other consequences of the theory shows a satisfying overall agreement with the experimental results of Land.

In concluding this section we may add that the choice of orangish-red and yellowish-green as the pair of filters is better than other because the resulting colors are then brighter in yellows and darker in blues. This produces the well known phenomena that the best yellows are bright and the "best" blues are dark. The color quality of Land projections can also be improved by increasing the contrast and by adding to the screen a uniform bluish light (not necessarily projected). This later operation accentuates the effects of the transformation although a uniform light does not carry any new information from the original scene that was photographed.

In constructing a more realistic model we start from the C.I.E. tristimulus functions $\bar{x}$, $\bar{y}$, $\bar{z}$, and developed an expansion in other orthogonal functions.

Before we conclude, we must emphasize that the model of Figure 3 holds only for small and moderate intensities.

1.4 GENERAL PLAN OF THE STUDY

The present research was designed to fulfill three primary objectives:

1) To collect data in a systematic way on two-color mixtures.

2) To collect the data in 1) in such a form as to enable a precise and quantitative evaluation of the conditions under which varying numbers of hues and saturations would be perceived and to determine the fidelity of these colors (the extent of which they agreed with the subject matter photographed).

3) To utilize this data in the evaluation of the model of color perception proposed by Yilmaz (1962).

The research is divided into two sections, the first dealing with data obtained with broadband filters, the second dealing with data obtained with narrowband filters.

The broadband data was collected using three slides photographed through three different filters (red, green, and blue) ana combined to yield three different pairs of slides. These were projected through nine combinations of the three filters used in photography plus the condition of no filter. In the cases where two filters were used the long record was always projected through the longer of the two filters. Three modes of response were utilized:

1) Absolute judgments of hue and saturations;

2) A matching procedure in which the subjects matched the stimulus seen with the left eye to one of a number of Munsell chips presented simultaneously, under Illuminant C, to the other eye;

3) A procedure like 2) above except that the Munsell chips were presented individually.

The narrowband data was obtained using six different slides (photographed through six different filters) combined to yield fifteen pairs. Each of these pairs was projected through twenty-seven combinations of the filters used for photography plus the condition of no filter over one of the records. Wavelength relationships were prescribed in the same manner as with the broad band filters. These conditions were replicated under the following conditions of incandescent illumination. (For C.I.E. coordinates see Appendix A):

1. Incandescent ("White")
2. Red, high saturation
3. Red, low saturation
4. Green, high saturation
5. Green, low saturation
6. Yellow, high saturation
7. Yellow, low saturation

SECTION 2

METHOD

2.1 BROAD BAND

2.1.1 Apparatus

Three black and white slides (35 mm) were prepared using eleven Munsell color chips as subject matter. Each slide was photographed through a different colored filter (red, green, and blue). Table 1 describes the set of chips.

Table 1. Definition of Chips Used as Stimuli in Terms of Munsell Notation, C.I.E. Coordinates and Wavelength.

Munsell	x	y	Dominant Wavelength
5 BG 5/8	.210	.329	492 mμ
5 B 5/6	.222	.272	486
10 PB 5/8	.257	.221	455
5 P 5/8	.289	.229	561 C
5 R 5/8	.441	.323	612
5 YR 5/8	.483	.395	587
5 Y 8/8	.416	.438	575
10 GY 5/8	.310	.465	551
10 G 5/8	.229	.372	499
White			
Black			

The chips were arranged in two rows of four chips; and one row or three. Three slides were prepared, one each through the following three filters:

1) Wratten	47 B	(452.7mμ)	Blue
2) Wratten	11	(552.5mμ)	Green
3) Wratten	29	(632.7mμ)	Red

Densities of the stimuli and background on each slide are given in Table 2.

Table 2. Stimuli and Background Densities.

Chip	No. 1 (452.7mμ)	No. 2 (552.5mμ)	No. 3 (632.7mμ)
5 BG	1.42	1.12	1.71
5 B	1.25	1.12	1.53
10 PB	1.10	1.17	1.20
5 P	1.17	1.18	1.12
5 R	1.64	1.18	1.02
5 YR	2.03	1.16	1.06
5 Y	1.61	0.66	0.77
10 GY	1.96	1.13	1.66
10 G	1.57	1.11	1.72
White	0.82	0.57	0.69
Black	2.15	1.97	2.06
Background	0.79	0.58	0.69

Two Kodak Signet 500 projectors were mounted on a 3 x 2 foot piece of plywood to insure steady images on the screen (Da-Lite). The projectors were equipped with irises and filter holders. Sylvania 750 watt DDB lamps were used as light sources (Tristimulus values for the projection lamp and the three filters are presented in Appendix A). A 36 x 24 x 36 inch viewing box (Figure 4) with the white interior illuminated by an "illuminant C" contained the

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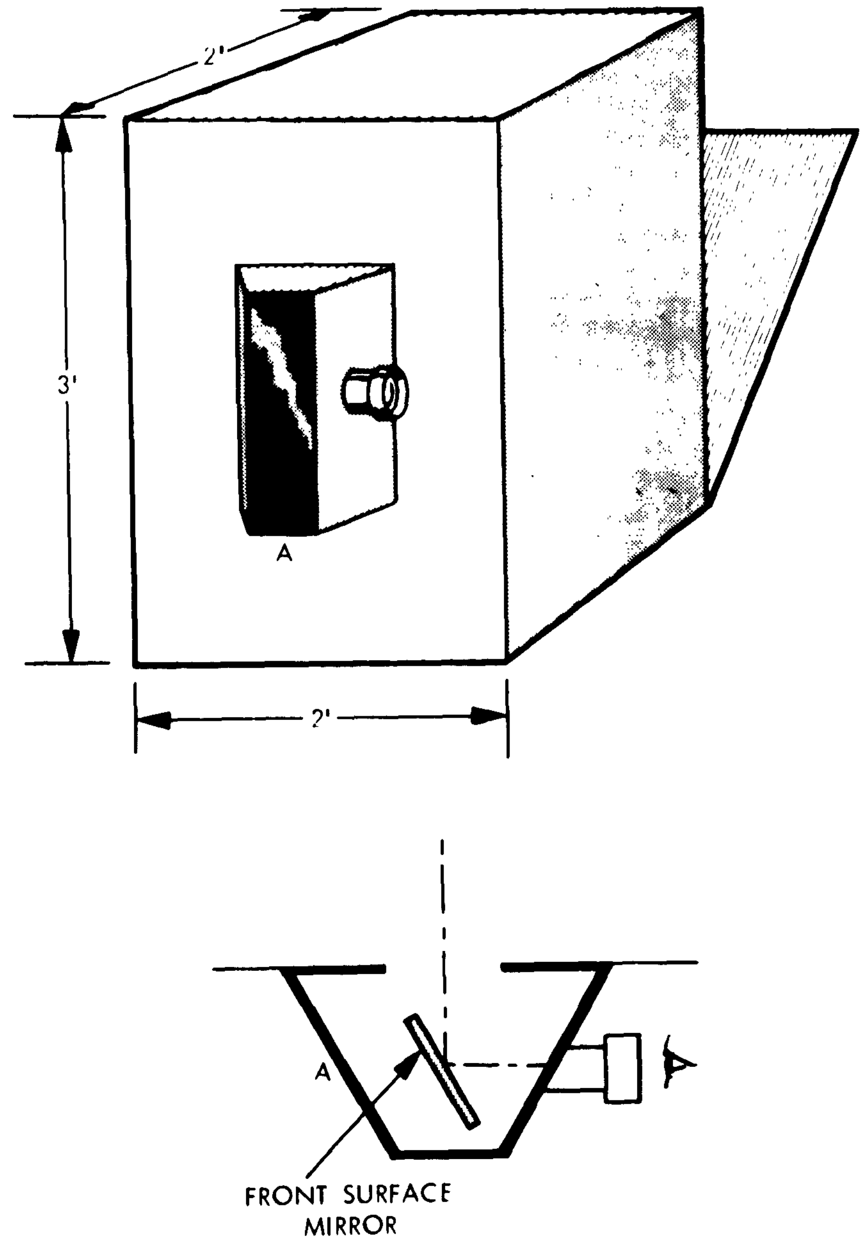

Figure 4. Viewing Box

matching chips. The chips presented the subjects were those used for stimuli, but for a given chip included all of the saturation steps below the one photographed (e.g., for stimulus 5 BG 5/8 the chips presented in the viewing box were 5 BG 5/8, 5/6, 5/4, 5/2, 5/1). The distance of the subjects left eye to the screen was 120 inches, while the distance from the right eye to the matching chips was 34 inches. These two distances resulted in equal visual angles being subtended by the stimuli and matching chips.

2.1.2 Subjects

One female (VC) and three male employees of the Applied Research Laboratory served as subjects. All had normal color vision.

2.1.3 Procedure

All subjects underwent training prior to the beginning of the experiment. During training they learned to make absolute judgments of hue and saturation of Munsell chips according to a somewhat modified version of the procedure employed by Helson, et al. (1952).

Each subject (S) was run under every combination of slides and projection filters, these combinations are given in Tables 3 and 4.

Table 3. Wavelengths of Filters Through Which Slide Combinations were Photographed.

Combination No.	λ max 1	λ max 2
1	452.7mμ	552.5mμ
2	452.7mμ	632.7mμ
3	552.5mμ	632.7mμ

Table 4. Wavelengths of Projection Filters Through Which Slide Combinations Were Photographed.*

Combination No.	λ max Short Record	λ max Long Record
1	452.7mμ	552.5mμ
2	452.7mμ	632.7mμ
3	452.7mμ	None
4	552.7mμ	632.7mμ
5	552.7mμ	None
6	632.7mμ	None
7	None	452.7mμ
8	None	552.5mμ
9	None	632.7mμ

Three subjects were run on three response procedures: absolute judgments, matching with all matching stimuli present, and matching with the matching stimuli presented one at a time. One subject (JG) contributed data under the absolute judgment condition only. This was due to the termination of his employment. All data was replicated once for each subject. Thus, a typical subject received all combinations of slides, projection filters and response procedures twice. Stimuli were projected with no ambient illumination and subjects adapted to the background illumination for ten minutes prior to the start of an experimental session. In the case of the absolute judgment procedure both of <u>S's</u> eyes were adapted to the background provided by the projectors and filters, while for the matching procedure <u>S's</u> left eyes were adapted to the projection light (25 ft. L)

*Each of these combinations was run with each of the three slide pairs in Table 3 for each subject.

while their right eyes adapted to the illumination inside the matching box (Illuminant "C" at 25 ft. L).

Subjects' responses were recorded in terms of Munsell Hue and Chroma.

2.2 NARROW BAND

2.2.1 Apparatus

Six black and white slides (35 mm) were prepared using eleven Munsell color chips as subject matter. Each slide was photographed through a different narrow band colored filter. (The details of slide preparation are presented in Appendix B). Table 1 above describes the chips which were arranged in two rows of four and one row of three. The colored filters used for photography with their wavelengths of maximum transmission are presented in Table 5.

Table 5. Narrow Band Filters and Wavelengths of Maximum Transmission (λ max).

	Filter	λ max	Hues
1.	CS 5-74	430mμ	Blue
2.	CS 4-104	485mμ	Blue Green
3.	CS 4-105	515mμ	Green
4.	W 73	575mμ	Yellow
5.	CS 2-78	640mμ	Red-Orange
6.	W 70	678mμ	Red

Densities of the stimuli and background on each slide (designated by λ max) are presented in Table 6.

Table 6. Stimuli and Background Densities.

	Filter λ max (mμ)					
Chip	430	485	515	575	640	678
5 YR	1.48	1.35	1.68	1.20	0.87	1.11
10 G	1.04	0.86	1.14	1.44	1.44	1.35
5 P	0.76	1.00	1.41	1.34	0.88	0.89
10 PB	0.71	0.92	1.32	1.36	1.02	0.88
Black	1.74	1.76	2.08	2.02	1.65	1.84
5 BG	0.9[illegible]	0.78	1.12	1.44	1.43	1.36
5 R	1.10	1.20	1.62	1.25	0.77	1.10
White	0.48	0.51	0.72	0.68	0.42	0.64
5 B	0.80	0.82	1.20	1.42	1.32	1.26
5 Y	1.08	0.82	0.94	0.79	0.50	0.75
10 GY	1.26	1.00	1.22	1.30	1.32	1.38
Background	0.50	0.52	0.74	0.74	0.44	0.63

The projectors, sources, and screen were the same for the narrow band as for the broad band. The tristimulus values for the projection lamp and filters are presented in Appendix A. The viewing box and illuminant were also the same as those used with the broad band filters, however, additional matching chips, listed in Table 7, were employed.

Table 7. Munsell Hue, Value, Chroma and Renotation Number of Matching Chips.

Hue	Remotation No.	Value	Chromas
5 R	5	5	8, 6, 4, 2, 1
10 R	10	5	8, 6, 4, 2, 1

Table 7. Munsell Hue, Value, Chroma and Renotation Number of Matching Chips. (continued)

Hue	Renotation No.	Value	Chromas
5 YR	15	5	8, 6, 4, 2, 1
10 YR	20	5	8, 6, 4, 2, 1
5 Y	25	8	8, 6, 4, 2, 1
10 Y	30	8	8, 6, 4, 2, 1
5 YG	35	5	6, 4, 2, 1
10 YG	40	5	8, 6, 4, 2, 1
5 G	45	5	8, 6, 4, 2, 1
10 G	50	5	8, 6, 4, 2, 1
5 BG	55	5	8, 6, 4, 2, 1
10 BG	60	5	6, 4, 2, 1
5 B	65	5	6, 4, 2, 1
10 B	70	5	6, 4, 2, 1
5 PB	75	5	8, 6, 4, 2, 1
10 PB	80	5	8, 6, 4, 2, 1
5 P	85	5	8, 6, 4, 2, 1
10 P	90	5	8, 6, 4, 2, 1
5 PR	95	5	8, 6, 4, 2, 1
10 PR	100	5	8, 6, 4, 2, 1

The distance from subjects left eye to the screen was 108 inches, while the distance from the right eye to the matching chip was 34 inches. These distances resulted in equal visual angles being subtended by the stimuli and matching chips.

Sylvania 60 watt white, yellow, green, and red incandescent light bulbs, mounted above a diffusing surface provided the ambient illumination. High saturation ambient illumination was achieved by using colored bulbs only while low saturation was achieved by using both colored and white bulbs. The C.I.E. coordinates of these bulbs is given in Appendix A.

2.2.2 Subjects

Three male employees of the Applied Research Laboratory served as subject. All had normal color vision.

2.2.3 Procedure

Fifteen combinations of slides (Table 8) and 27 combinations of projection filters (Table 9) were combined factorially. These projection conditions in turn were combined factorially with seven conditions of ambient illumination. Different subjects underwent different conditions of ambient illumination. These conditions and the subjects used are presented in Table 10.

Table 8. Wavelengths of Filters Through Which Slide Combinations were Photographed.

Combination No.	λ max_1	λ max_2
1	430	485
2	430	515
3	430	575
4	430	640
5	430	678
6	485	515
7	485	575
8	485	640

Table 8. Wavelengths of Filters Through Which Slide Combinations were Photographed. (continued)

Combination No.	λ max_1	λ max_2
9	485	678
10	515	575
11	515	640
12	515	678
13	575	640
14	575	678
15	640	678

Table 9. Wavelengths of Projection Filters Through Which Slide Combinations were Projected.

Combination No.	λ max Short Record	λ max Long Record
1	430	485
2	430	515
3	430	575
4	430	640
5	430	678
6	430	No filter
7	485	515
8	485	575
9	485	640
10	485	678
11	485	No filter
12	515	575
13	515	640

Table 9. Wavelengths of Projection Filters Through Which Slide Combinations were Projected. (continued)

Combination No.	λ max Short Record	λ max Long Record
14	515	678
15	515	No filter
16	575	640
17	575	678
18	575	No filter
19	640	678
20	640	No filter
21	678	No filter
22	No filter	430
23	No filter	485
24	No filter	515
25	No filter	575
26	No filter	640
27	No filter	678

Table 10. Conditions of Ambient Illumination and Subjects Used with Each.

Illumination

Hue	Saturation	Subject (S)
White	--	AC and GF
Red	High	AC
Red	Low	GF
Green	High	WW
Green	Low	AC
Yellow	High	GF
Yellow	Low	GF

All subjects responded by selecting one matching chip (viewed with the right eye). All matching chips were presented together since this procedure was revealed as the most efficient (considering reliability and time) in the collection of the broad band data. S's left eyes were adapted to ambient illumination and the background projected on the screen for 10 minutes prior to the start of an experimental session. During this period the subjects' right eyes were adapted to the "C" illumination in the matching box. Illumination level on the screen and in the box was 2 ft. L.

Subjects' responses were recorded in terms of Munsell Hue and Chroma.

SECTION 3

RESULTS

3.1 BROAD BAND

The wavelengths (in mμ) and ranges of excitation purity (P_e)[1] of the stimulus chips and modal responses (with all response procedures pooled) are presented in Tables 11, 12, and 13. The data from which these tables were prepared is presented in Appendix C.

Table 14 indicates which hues were perceived by at least 5% of the S's with the various filter combinations employed.* Brief comments are also presented which list the hues not obtained with each filter pair and an explanation, where possible, of the reported colors in terms of traditional color mixture theory with consideration given to the effects of hues induced by the background color. Figure 5 through 8 are plots of the colors obtained with four sample pairs of filters as a function of the densities of the stimulis on the long and short records.

3.2 NARROW BAND

The wavelengths (in mμ) and ranges of excitation purity (P_e) of the stimulus chips and the responses are presented in Appendix C. The hues perceived through the various filter combinations are presented in Table 15.[2] In this table responses under the same ambient illumination are pooled. A hue is listed for a given filter

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*Ratio of.

1. Excitation purity (P_e) is defined as the ratio of two distances on the chromaticity diagram. The first distance (D_1) is that between the illuminant and the color in question. The second distance (D_2) is that between the illuminant and the point on the spectrum locus of the same dominant wavelength as the color in question. Since $D_1 \leq D_2$ excitation purity ranges from 0 to 1.
2. A detailed description of the manner used to determine the physical characteristics of the slides producing any given set of responses in Tables 14 and 15 is presented in Appendix D.

Table 11. Purity (P_e) Ranges Associated with Modal Responses (in mμ) for Slide Combination 1.

	CHIP																			
	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e
	551	40	575	61	486	47	612	37	492	36	455	33	561c	31	499	27	587	68	BACKGROUND	
PROJECTION FILTER COMBINATION NO. 1	551 575	10-31 18-61	575	30-61	455	4-18	551 575	5-20 11-48	575	11-48	455	8-33	455	8-33	575	11-61	575	11-61	455	18-33
2	612	9-37	612	37-60	455	4-33	498c	15-30	612	9-18	455	8-33	455	8-33	612	4-37	612	4-37	498c	15-60
3	575 551	18-61 5-20	575	30-61	455	4-26	575	11-61	575	11-48	455	8-33	455	4-33	575	11-61	575	18-61	455	8-70
4	612 498c	18-28 15-30	612	37-50	551	5-20	561c	8-24	612	4-18	499 492	13-20 18-27	492	3-18	612	9-37	612	9-37	575	18-61
5	612	4-18	561c	15-31	551	5-10	612 498c 561c	4-9 4-5 4-24	587	8-18	551	10-20	551	5-20	612	4-9	561c	4-31	WHITE	
6	492	3-18	492 499	9-27 13-27	612	18-28	486	7-25	612 587	4-9 8-18	612	18-37	612	9-37	492	3-9	486 499	7-25 3-6	612	9-70
7	486	7-37	455	26-33	575	11-48	486	7-37	561c	4-17	575	11-61	575	11-48	486	7-37	486	7-56	455	8-26
8	551	5-10	551	5-43	587	8-18	551	5-10	587	8-18	561c	17-24	561c	8-17	499	3-6	551	5-10	572	17-47
9	612 498c	4-37 5-30	612	37-60	587	8-18	498c 612	5-22 4-28	612	4-18	499 492	6-13 3-27	499 492	3-13 3-18	612	9-37	498c	4-30	612	9-70

Table 12. Purity (P_e) Ranges Associated with Modal Responses (in mμ) for Slide Combination 2.

PROJECTION FILTER COMBINATION NO.	CHIP																			
	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e
	551	40	575	61	486	47	612	37	492	36	455	33	561c	31	499	27	587	67 67	BACKGROUND	
1	575	30-61	575	30-61	486	25-37	575	30-61	486	7-37	455	8-33	455	8-18	486	7-37	575	30-61	455	18-70
2	612	4-37	612	37-50	486	7-50	612	18-37	486	7-40	455	18-33	561c	4-17	486	7-37	612	18-46	561c	31-40
3	BLACK		575	30-61	486	13-50	575	18-61	486	7-37	455	8-33	561c	4-17	486	7-37	575	18-61	455	8-80
4	612	4-18	612	37-60	499	6-20	612	28-37	499	3-13	499	3-13	587	3-35	486	7-37	612	18-46	575	11-61
5	BLACK		561c	8-31	551 499	10-20 6-13	561c	8-24	551	5-10	551	5-20	551	5-20	BLACK		561c	8-31	551	20-60
6	BLACK		499 492	6-27 3-36	612	4-37	499 432	6-13 3-27	498c	5-30	612	9-37	612	4-18	612 498c	4-18 4-15	499	3-20	612	9-70
7	436	7-13	486 455	25-50 26-33	575	18-61	486	7-37	575	18-61	575	11-30	561c	3-17	575	11-61	486	13-50	455	4-50
8	BLACK		551	10-43	561c	8-17	551	10-31	561c	8-31	612 561c	4-18 4-17	575	11-18	561c	4-8	499	6-13	572	11-60
9	BLACK		612	37-60	499	6-13	612	9-37	492	3-18	499	3-6	612	4-18	BLACK		612	9-46	612	9-60

Table 13. Purity (P_e) Ranges Associated with Modal Responses (in mμ) for Slide Combination 3.

	CHIP																			
	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e	λ	P_e
	551	40	575	61	486	47	612	37	492	36	455	33	561c	31	499	27	587	67	BACKGROUND	
PROJECTION FILTER COMBINATION NO. 1	486	7-45	575	11-18	486	7-45	575	18-61	486	7-45	455	4-8	575	11-48	486	7-45	575	11-61	455	8-70
2	486	7-45	498c	15-42	486	7-45	612	25-50	486	7-45	498c 561c	5-22 17-24	498c	5-22	486	13-45	612	18-37	498c	15-50
3	486	7-50	575	11-18	486	7-50	575	11-61	486	7-50	575	11-30	575	11-48	486	13-50	575	18-48	455	4-57
4	551	10-31	575	11-61	551	5-31	612	18-37	551 493	10-31 6-18	587	8-18	612	9-28	499	6-13	612	18-37	575	11-61
5	551	5-20	575	11-18	551	5-20	561c	8-31	551	5-20	587	8	561c	4-24	551	5-20	561c	8-24	WHITE	
6	612 498c	9-70 5-30	612	4-60	612	4-60	492	3-18	612	9-50	612	4-9	499	3-6	612	9-46	499	6-13	612	18-70
7	572	17-32	561c 455	4-45 4-40	572	11-32	455	8-33	572	32	561c	4-24	455	4-18	572 575	32-47 30-61	455	8-33	WHITE	
8	612	4-9	575	11-30	612 587	4-9 8-35	551	10-20	612	4-18	587	8-18	551	5-20	498c	4-15	551	5-20	WHITE 575	 11-48
9	499	3-9	575	11-30	551	5-20	575	11-30	551	10-20	612	4-9	612	9-28	551	10-20	612	9-28	WHITE	

Table 14. Hues Produced by Various Filter Combinations.

PROJECTION FILTER COMBINATION	PERCEIVED BACKGROUND HUE (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
1) blue & green (453 & 533mμ)	blue (455mμ)	a) green (551mμ) b) blue (455,486mμ) c) yellow (575mμ)	reds and purples missing. a&b) traditional color mixture theory predictions. c) a grey spot would take on the hue of the complement of the background. Since the background is 455mμ the induced color would be yellow of about 570mμ.
2) blue & red (453 & 633mμ)	purple (561c mμ)	a) red (612mμ) b) blue (455,486mμ) c) purple (498c,561c mμ)	yellows and greens missing. all colors predicted by traditional color mixture theory.
3) blue & incandescent (453 & 583mμ*)	blue (455mμ)	a) yellow (572,575mμ) b) blue (455,486mμ) c) purple (561c mμ)	reds and greens missing. all traditional predictions.
4) green & red (533 & 633mμ)	yellow (575mμ)	a) red (612mμ) b) green (551,499mμ) c) yellow (575mμ) d) blue (492,486mμ) e) purple (561c mμ)	a,b&c) red,green and yellow predicted by traditional mixture theory. d) blue induced by the yellow background in a spot in which red cancels most but not quite all the green, i.e., yellow induces 474mμ which mixes with some green to give 486 and 492mμ. e) purple: yellow background induces 474mμ which mixes with some projected red to produce purple.

*The incandescent lamp had a wavelength of 583mμ and a purity of 50%.

Table 14. Hues Produced by Various Filter Combinations (continued)

PROJECTION FILTER COMBINATION	PERCEIVED BACKGROUND HUE (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
5a) green and incandescent (553 & 583$m\mu$)	green (551$m\mu$)	a) green (551$m\mu$) b) purple (561c $m\mu$) c) blue (499$m\mu$)	no red, yellow. a) green expected on basis of law of intermediates. b) purple produced by mixture of a little red-yellow (583$m\mu$) with the induced complement (551c $m\mu$) of the background (551$m\mu$) c) blue: induced purple (561c $m\mu$) plus projected green (553$m\mu$) produces blue.
5b) green and incandescent (553 & 583$m\mu$)	yellow (572-575$m\mu$)	a) green (551$m\mu$) b) yellow (575$m\mu$) c) purple (561c $m\mu$) d) blue (499$m\mu$) e) red (612$m\mu$)	a&b) green and yellow expected on basis of law of intermediates. c) purple produced by mixture of a little red-yellow (583$m\mu$) with the induced complement (475$m\mu$) of the yellow background. d) blue produced by mixture of a little yellow (553$m\mu$) with the induced complement (475$m\mu$) of the yellow background. e) red: yellow-red (583$m\mu$) seen in a yellow background (572-575$m\mu$) would appear more red due to contrast effects.
6) red and incandescent (633 & 583$m\mu$)	red (612$m\mu$)	a) red (612$m\mu$) b) yellow (587$m\mu$) c) blue (499,492$m\mu$) d) purple (498c $m\mu$)	green missing. a&b) red and yellow are predicted by the law of intermediates. c) blue (492$m\mu$) is the approximate complement of red (612$m\mu$) therefore could be induced by the background in a neutral spot. Blue (499$m\mu$) could be produced by a mixture of a little yellow (583$m\mu$) from the lamp with blue of 490$m\mu$ induced by the background. d) purple (498c $m\mu$) produced by a mixture of induced blue (490$m\mu$) and some projected red in the same spot.

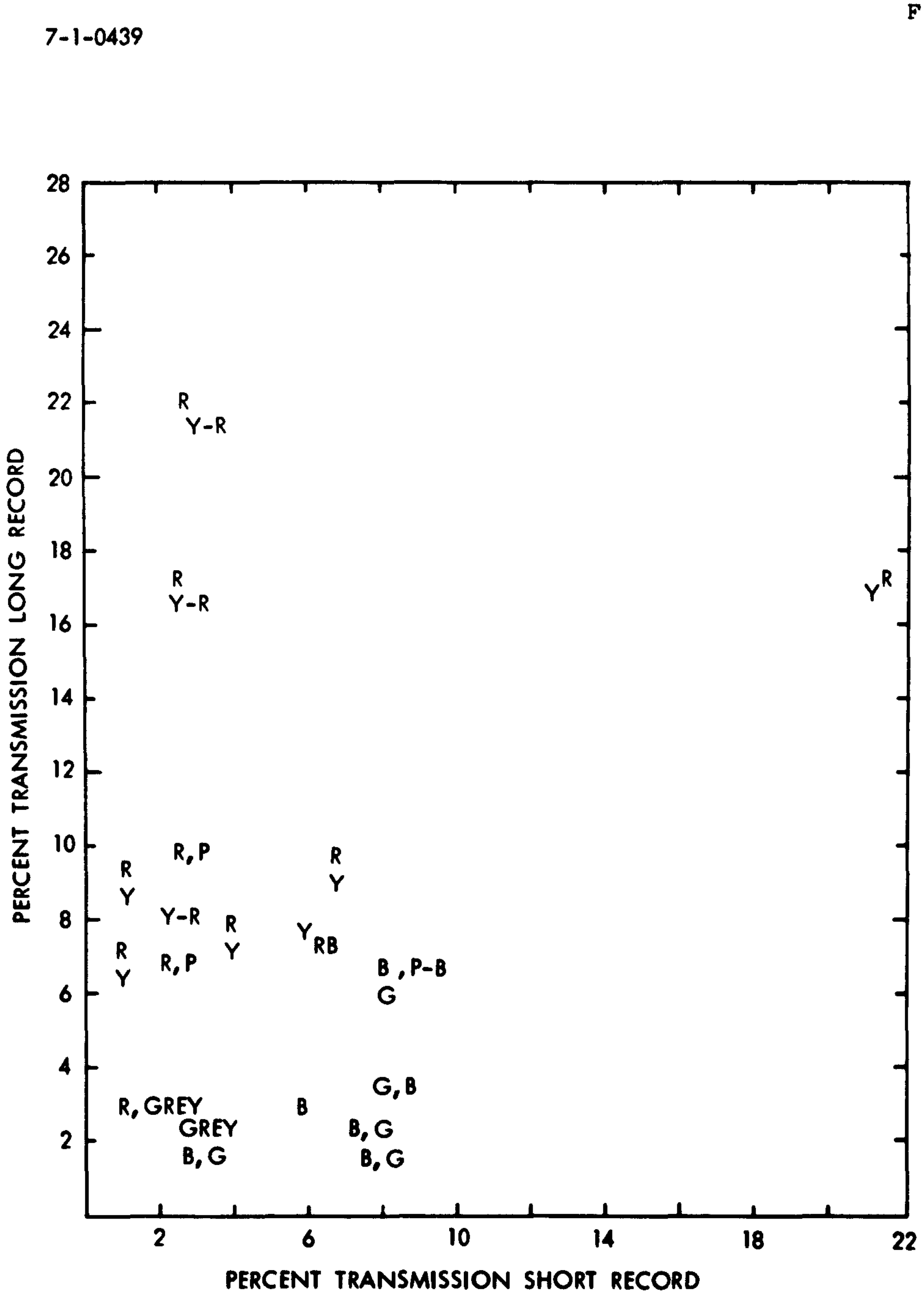

Figure 5. Colors Reported as a Function of Densities of Long and Short Records with the Long Record Projected Through the Red Filter and the Short Record with No Filter

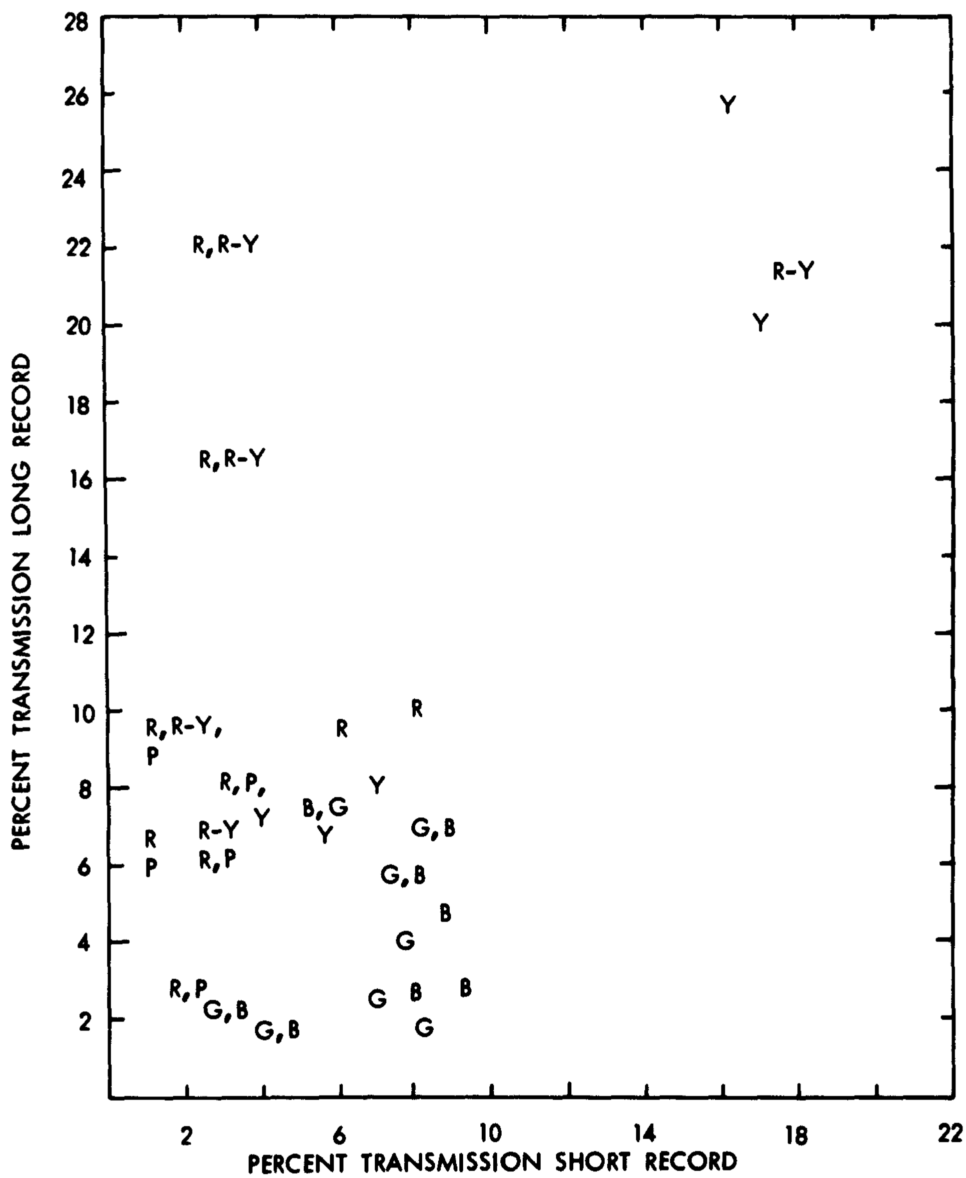

Figure 6. Colors Reported as a Function of Densities of Long and Short Records with the Long Record Projected Through the Red Filter and the Short Record Through the Green Filter

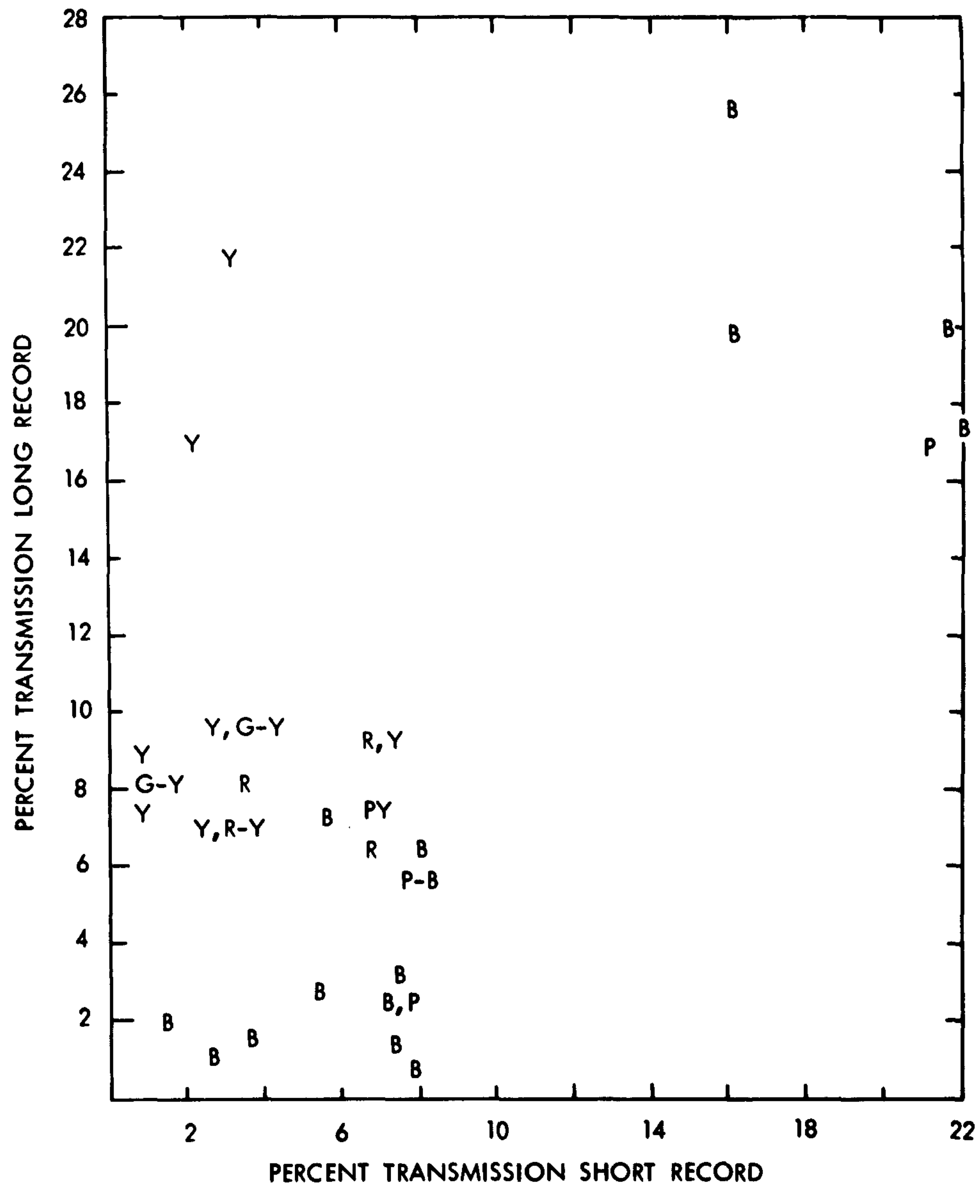

Figure 7. Colors Reported as a Function of Densities of Long and Short Records with the Long Record Projected Through the Green Filter and the Short Record Through the Blue Filter

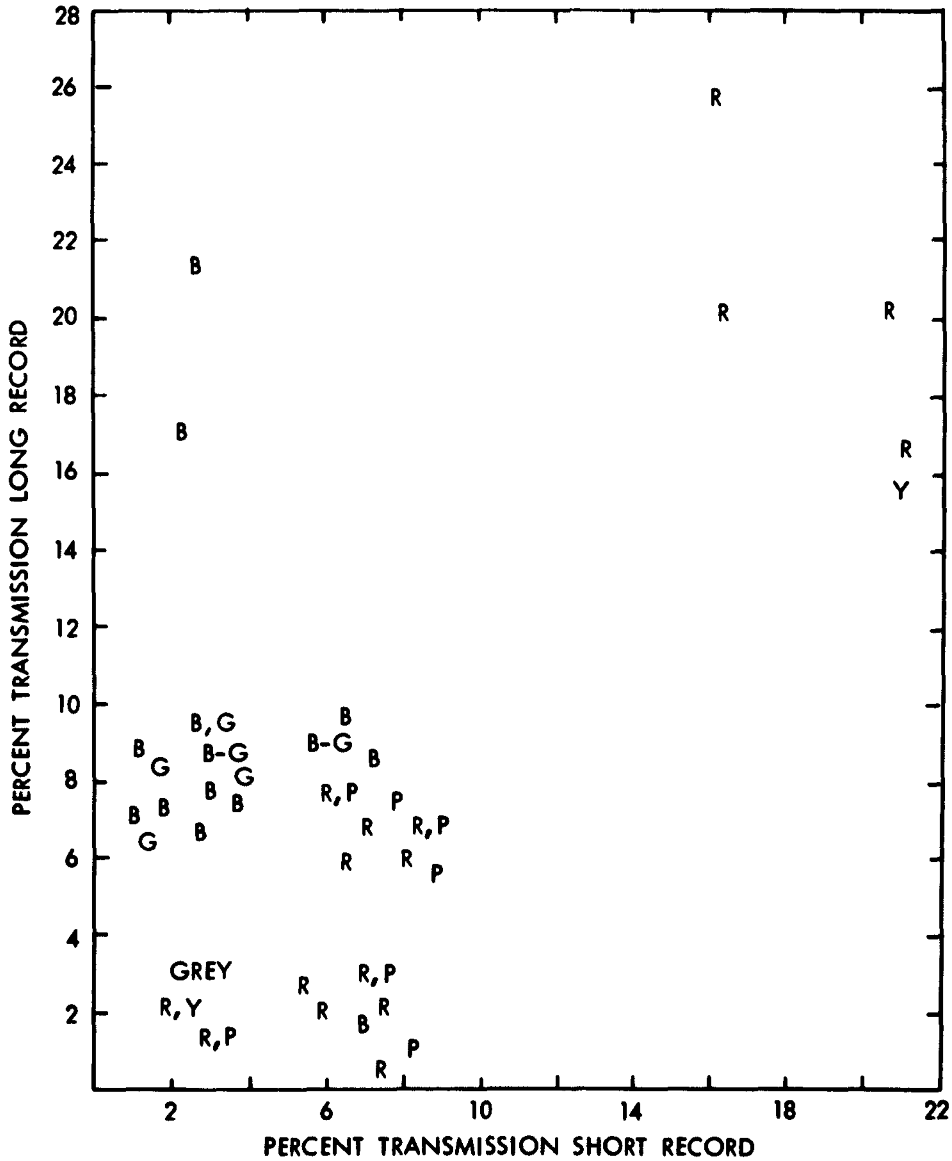

Figure 8. Colors Reported as a Function of Densities of Long and Short Records with the Long Record Projected Through No Filter and the Short Record Through the Red Filter

TABLE 15. **Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination**

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
1) 430 & 485mμ	a) white	blue (455-480mμ)	a) yellow b) red-yellow c) purple	MISSING: green, blue, red a&b) yellow and red-yellow are obtainable as complements of the blue background. c) purples produced by mixtures of small amounts of projected 430 with larger amounts of induced red-yellow.
	b) red	blue (455-485mμ)	a) yellow b) blue c) red d) purple	MISSING: green a&b) yellow and blue produced by projection filters and induced effects by the blue background. c) red obtainable from ambient illumination. d) purple produced by red ambient added to projected blue.
	c) green	blue (455-480mμ)	a) yellow b) blue c) red-yellow	MISSING: red, green, purple a,b&c) yellow, blue, and red-yellow are all explained by the law of intermediates and induced color.
	d) yellow	blue (455-480mμ)	a) yellow b) red-yellow c) purple	MISSING: green, blue, red a,b&c) explanation in 1a above applies.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
2) 430 & 515mμ	a) white	blue (455-480mμ)	a) yellow b) purple	MISSING: green, blue, red a&b) yellow is complement of background; purple is a mixture of small amount blue (430) and large amount yellow-red induced by background (480).
	b) red	blue (475-485mμ)	a) yellow b) red c) blue d) purple	MISSING: green a) yellow induced by blue background. b) red produced by ambient illumination. c) blue produced by filters. d) purple produced by mixing ambient red with projected blue.
	c) green	blue (455-485mμ)	a) yellow b) blue c) purple d) yellow-green	MISSING: red, green a) yellow induced by background. b) blue produced by filters. c) purple ? d) yellow-green mixture of induced yellow with green filter or green ambient illumination.
	d) yellow	blue (455-485mμ)	a) yellow b) red-yellow c) purple	MISSING: blue, green, red a&b) yellow and red-yellow induced by blue background. c) purple mixture of small amounts of blue (430) with large amounts of induced red-yellow.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
3) 430 & 575mμ	a) white	purple (561c mμ)	a) yellow b) purple c) blue	MISSING: red, green a) yellow produced by yellow filter (575). b) purple: same as background. c) blue produced by blue filter.
	b) red	blue (455-485mμ)	a) yellow b) purple c) red d) blue	MISSING: green a) yellow produced by yellow filter (575). b) purple mixture of blue background with red ambient illumination. c) red: ambient. d) blue: same as background.
		purple (538c-461c mμ)	a) yellow b) blue c) purple d) red-yellow e) green-yellow	MISSING: green, red a) yellow produced by yellow filter. b) blue produced by blue filter. c) purple: background. d) red-yellow: yellow filter plus ambient red. e) green-yellow: intermediate between two filters.
	c) green	purple (498c-561c mμ)	a) yellow b) blue c) green d) purple	MISSING: red a) yellow: yellow filter. b) blue: blue filter. c) green: ambient illumination. d) purple: background (mixture of 430&575).
	d) yellow	purple (561c mμ)	a) yellow b) purple	MISSING: red, green, blue a) yellow: yellow filter. b) purple: background (mixture of 430&575).

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
4) 430 & 640mμ	a) white	purple (538c-561c mμ)	a) yellow b) blue c) purple d) red-yellow	MISSING: red, green a) yellow: complement of background. b) blue: blue filter. c) purple: background (430&640). d) red-yellow: complement of background (560) plus a small amount of red (640).
	b) red	purple (498c-538c mμ)	a) red b) purple c) yellow d) blue	MISSING: green a) red: red filter and ambient illumination. b) purple: background (430&640) with addition of red ambient illumination. c) yellow: complement of background with some projected red added. d) blue: blue filter.
	c) green	purple (498c-538c mμ)	a) green b) yellow c) blue	MISSING: red, purple a) green: blue filter plus green ambient illumination. b) yellow: red filter plus green ambient. c) blue: blue filter.
	d) yellow	purple (538c-561c mμ)	a) yellow b) blue c) purple d) red-yellow	MISSING: red, green a) yellow: ambient illumination. b) blue: blue filter c) purple: red and blue filters. d) red-yellow: red filter plus yellow ambient illumination.

TABLE 15. **Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination** (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
5) 430 & 678mμ	a) white	purple (538c-561c mμ)	a) yellow b) green c) blue d) purple e) red	a) yellow: complement of background plus some red (678). b) green: complement of background plus some blue 430 c) blue: blue filter. d) purple: blue and red filters. e) red: red filter.
	b) red	purple (498c-538c mμ)	a) red b) yellow c) purple d) blue	MISSING: green a) red: red filter. b) yellow: complement of background (538) plus red (678). c) purple: red plus blue filters. d) blue: blue filter.
	c) green	purple (538c-561c mμ)	a) yellow b) green c) blue d) purple	MISSING: red a) yellow: complement of background plus red. b) green: ambient illumination or complement of background. c) blue: blue filter. d) purple: red plus blue filters.
	d) yellow	purple (538c-561c mμ)	a) yellow b) red c) purple	MISSING: green, blue a) yellow: complement of background (561) plus red (678). b) red: red filter. c) purple: red plus blue filters.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
6) 430 & None*	a) white	purple (561c mμ)	a) yellow b) blue c) purple	MISSING: red, green a) yellow: complement of background plus red from incandescent source (561&583). b) blue: blue filter. c) purple: blue plus incandescent* (430& 583).
		blue (455mμ)	a) yellow b) blue	MISSING: red, green, purple a) yellow: complement of blue (455) is 570. b) blue: blue filter
	b) red	blue (455mμ)	a) yellow b) blue c) purple d) red	MISSING: green a) yellow: complement of blue background. a blue: blue filter. c) purple: blue filter plus red ambient illumination. d) red: ambient illumination.
		purple (561c mμ)	a) yellow b) blue c) purple d) red	MISSING: green a) complement of purple background plus red ambient illumination. b) blue: blue filter. c) purple: blue filter plus incandescent* source and ambient illumination. d) red: incandescent* source plus ambient illumination.

*The incandescent lamp (Sylvania DDB 750W) had a wavelength of 583mμ and a purity of 50%.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
6) 430 & None* (cont'd)	c) green	purple (538c-561c mμ)	a) green b) yellow c) blue d) purple	MISSING: red a) green: ambient illumination. b) yellow: complement of purple background. c) blue: blue filter. d) purple: blue filter plus incandescent*.
	d) yellow	purple (561c mμ)	a) yellow b) purple	MISSING: red, green, blue a) yellow: ambient illumination. b) purple: blue plus incandescent (583mμ).
7) 485 & 515mμ	a) white	green (514-551mμ)	a) yellow b) red c) blue d) green	MISSING: purple a) yellow ? b) red ? c) blue: blue filter. d) green: green filter.
		blue (488-500mμ)	a) red b) green	MISSING: blue, purple, yellow a) red: complement of blue background. b) green: green filter.
	b) red	green (500-550mμ)	a) green b) blue c) red d) yellow	MISSING: purple a) green: green filter. b) blue: blue filter. c) red: ambient illumination. d) yellow: mixture of green background and red ambient illumination.

*The incandescent lamp (Sylvania DDB 750W) had a wavelength of 583mμ and a purity of 50%.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
7) 485 & 515mμ (cont'd)	c) green	green (514-551mμ)	a) red b) green c) yellow	MISSING: blue, purple a) red ? b) green: green filter. c) yellow ?
	d) yellow	blue-green (492-514mμ)	a) red b) green c) yellow	MISSING: blue, purple a) red: complement of 492 is red of 640. b) green: green filter. c) yellow: ambient illumination or mixture of red induced by the background and green from filter.
8) 485 & 575mμ	a) white	blue-green (490-500mμ)	a) red b) blue c) yellow d) purple	MISSING: green a) red: complement of blue of 490 (background) is red of 607. b) blue: blue filter. c) yellow: yellow filter. d) purple: induced red plus projected blue.
		green (500-550mμ)	a) yellow b) purple c) red	MISSING: green, blue a) yellow: yellow filter. b) purple: induced complement of background. c) red: induced purple mixed with yellow of filter produces red.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
8) 485 & 575mμ (cont'd)	b) red	green (500-550mμ)	a) yellow b) red c) blue d) purple e) green	a) yellow: yellow filter. b) red: ambient illumination. c) blue: blue filter. d) purple: complement of background. e) green: mixture of two filter hues.
	c) green	green (514-566mμ)	a) green b) red c) yellow d) blue	MISSING: purple a) green: mixture of two filter hues. b) red: purple induced by background plus yellow of filter produces red. c) yellow: yellow filter. d) blue: blue filter.
	d) yellow	blue (488-500mμ)	a) red b) yellow c) purple	MISSING: blue, green a) red: complement of blue background. b) yellow: yellow filter. c) purple: induced red plus projected blue.
		green (514-551mμ)	a) red b) yellow c) purple	MISSING: blue, green a) red: purple induced by background plus projected yellow. b) yellow: yellow filter. c) purple: complement of background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
9) 485 & 640mμ	a) white	blue (481-500mμ)	a) red b) blue c) green d) purple e) yellow	a) red: red filter. b) blue: blue filter. c) green: mixture of yellow of 581 induced by background and some projected blue of 485. d) purple: mixture of red plus blue. e) yellow: complement of background of 481 is yellow of 581.
		green (551-566mμ)	a) green b) yellow	MISSING: red, blue, purple a) green: background hue. b) yellow: mixture of green background and projected red.
	b) red	blue (488-500mμ)	a) red b) blue c) purple	MISSING: yellow, green a) red: red filter. b) blue: blue filter. c) purple: a + b.
		green (514-566mμ)	a) red b) green	MISSING: yellow, blue, purple a) red: red filter. b) green: background hue.
	c) green	green (514-566mμ)	a) green b) red c) blue d) yellow	MISSING: purple a) green: background hue. b) red: red filter. c) blue: blue filter. d) yellow: green background and projected red.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
9) 485 & 640mμ (cont'd)	d) yellow	blue (486-500mμ)	a) red b) blue c) yellow d) purple e) green	a) red: red filter. b) blue: blue filter. c) yellow: complement of blue background. d) purple: mixture of red and blue filters. e) green: yellow induced by background plus some projected blue.
10) 485 & 678mμ	a) white	blue (486-500mμ)	a) yellow b) red c) green d) blue e) purple	a) yellow: complement of blue background. b) red: red filter. c) green: yellow induced by background plus some projected blue. d) blue: blue filter. e) purple: red plus blue filters.
	b) red	blue (486-500mμ)	a) blue b) red c) purple	MISSING: green, yellow a) blue: blue filter. b) red: red filter. c) purple: blue plus red filters.
		green (514-566mμ)	a) red	MISSING: green, yellow, blue, purple a) red: red filter.
	c) green	blue (488-500mμ)	a) red b) blue c) green d) yellow	MISSING: purple a) red: red filter. b) blue: blue filter. c) green: yellow induced by background plus projected blue. d) yellow: complement of background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
10) 485 & 670mμ (cont'd)	d) yellow	blue (486-492mμ)	a) red b) blue c) yellow	MISSING: green, purple a) red: red filter. b) blue: blue filter. c) yellow: complement of background.
11) 485 & None	a) white	blue (486-500mμ)	a) red b) yellow c) blue d) purple	MISSING: green a) red: incandescent source has a wave-length of 583mμ. b) yellow: complement of blue background c) blue: blue filter. d) purple: blue filter plus incandescent.
	b) red	green (500-550mμ)	a) red b) purple c) blue d) green e) yellow	a) red: incandescent lamp and/or ambient illumination. b) purple: blue filter plus incandescent. c) blue: blue filter. d) green: background. e) yellow: green of background plus incandescent.
	c) green	green (514-566mμ)	a) red b) green c) yellow	MISSING: blue purple a) red: incandescent source. b) green: background and ambient illumination. c) yellow: red from incandescent plus green from background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
11) 485 & None (cont'd)	d) yellow	blue (481-499mμ)	a) red b) yellow c) purple	MISSING: blue, green a) red: incandescent source. b) yellow: complement of blue background. c) purple: incandescent source (red) plus blue filter.
12) 515 & 575mμ	a) white	green (514-566mμ)	a) red b) yellow c) green d) purple	MISSING: blue a) red: purple induced by background plus some projected yellow. b) yellow: yellow filter. c) green: green filter. d) purple: complement of background.
	b) red	green (514-551mμ)	a) purple b) yellow c) red d) green	MISSING: blue Same as 12a above
	c) green	green-yellow (566-572mμ)	a) red b) green c) yellow	MISSING: blue, purple a) red: purple induced by background of 566 plus some projected yellow. b) green: green filter. c) yellow: yellow filter.
	d) yellow	green (514mμ)	a) red b) green c) purple d) yellow	MISSING: blue Same as 12a above.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
13) 515 & 640mμ	a) white	green (514-566mμ)	a) red b) green c) yellow d) purple	MISSING: blue a) red: red filter. b) green: green filter. c) yellow: red plus green. d) purple: complement of green background.
	b) red	green (551-566mμ)	a) red b) green c) purple d) yellow e) blue	a) red: red filter. b) green: green filter. c) purple: complement of green background. d) yellow: red plus green. e) blue: induced purple (strong) plus weak projected green produce blue.
	c) green	yellow-green (566-572mμ)	a) green b) red c) blue d) yellow	MISSING: purple a) green: green filter. b) red: red filter. c) blue: complement of backgrounds from 568 to 572. d) yellow: red plus green.
	d) yellow	green (514-551mμ)	a) red b) green c) blue d) purple	MISSING: yellow a) red: red filter. b) green: green filter. c) blue: induced purple plus projected green. d) purple: complement of green background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
14) (515 & 670mμ	a) white	green (514-566mμ)	a) red b) green c) yellow d) purple e) blue	a) red: red filter. b) green: green filter. c) yellow: red plus green. d) purple: complement of green background. e) blue: induced purple plus projected green.
	b) red	green (514-551mμ)	a) red b) green c) yellow d) purple	MISSING: blue a) red: red filter. b) green: green filter. c) yellow: red plus green. d) purple: complement of green background.
	c) green	green (551-566mμ)	a) red b) green c) yellow	MISSING: blue, purple a) red: red filter. b) green: green filter. c) yellow: red plus green.
	d) yellow	green (514mμ)	a) red b) green c) purple d) yellow	MISSING: blue Same as 14b above.
15) 515 & None	a) white	green (514-551mμ)	a) red b) yellow c) blue d) purple	MISSING: green a) red: incandescent lamp. b) yellow: red plus green. c) blue: induced purple plus projected green. d) purple: complement of green background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
15) 515 & None (cont'd)	b) red	green (514-551mμ)	a) red b) purple c) yellow d) green	MISSING: blue a) red: incandescent source. b) purple: complement of green background. c) yellow: red plus green. d) green: green filter.
	c) green	green (551-566mμ)	a) red b) green c) yellow	MISSING: blue, purple a) red: incandescent source. b) green: green filter. c) yellow: red plus green.
	d) yellow	green (514mμ)	a) red b) green c) purple d) yellow	MISSING: blue Same as 12b above.
16) 575 & 640mμ	a) white	yellow (575-583mμ)	a) yellow b) blue c) red d) purple e) green	a) yellow: yellow filter. b) blue: complement of yellow background. c) red: red filter. d) purple: induced blue plus projected red. e) green: induced blue plus projected yellow.
	b) red	yellow (572-583mμ)	a) yellow b) blue c) red d) purple e) green	Same as 16a.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
16) 575 & 640mμ (cont'd)	c) green	yellow (575-583mμ)	a) yellow b) red c) blue d) green e) purple	Same as 16a.
	d) yellow	red-yellow (575-587mμ)	a) red b) green c) blue d) purple e) yellow	Same as 16a.
17) 575 & 678mμ	a) white	yellow (572-583mμ)	a) yellow b) blue c) red d) purple	MISSING: green a) yellow: yellow filter. b) blue: complement of background. c) red: red filter. d) purple: induced blue plus projected red.
	b) red	yellow (572-575mμ)	a) red b) purple c) blue d) yellow e) green	a) red: red filter. b) purple: induced blue plus projected red. c) blue: complement of background. d) yellow: yellow filter. e) green: induced blue plus projected yellow.
		green (551-566mμ)	Same as with yellow background	a) red: red filter. b) purple: complement of green background. c) blue: induced purple plus green background. d) yellow: yellow filter. e) green: background.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
17) 575 & 670mμ (cont'd)	c) green	yellow (575-583mμ)	a) red b) purple c) blue d) yellow e) green	Same as 17b.
	d) yellow	yellow-green (566-583mμ)	a) red b) purple c) blue d) yellow e) green	Same as 17b.
18) 575 & None	a) white	yellow-green (566-575mμ)	a) yellow b) blue c) purple d) red	MISSING: green a) yellow: yellow filter. b) blue: complement of yellow background. c) purple: induced blue plus red from incandescent lamp. d) red: incandescent lamp.
	b) red	green (514-566mμ)	a) red b) green c) yellow d) blue e) purple	a) red: incandescent lamp. b) green: background. c) yellow: yellow filter. d) blue: induced purple plus projected green. e) purple: complement of background.
	c) green	yellow (572-583mμ)	a) green b) yellow c) red d) blue e) purple	a) green: projected yellow plus induced blue. b) yellow: yellow filter. c) red: incandescent source. d) blue: complement of yellow background. e) purple: projected red and induced blue.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
18) 575 & None (cont'd)	d) yellow	green (551-566mμ)	a) green b) red c) yellow d) blue e) purple	Same as 18b.
19) 640 & 670mμ	a) white	red (595-612mμ)	a) red b) blue	MISSING: green, blue, purple a) red: red filter. b) blue: complement of red background.
	b) red	red (595-612mμ)	a) red b) blue c) green d) purple	MISSING: blue a) red: red filter. b) blue: complement of red background. c) green ? d) purple: induced blue plus projected red.
	c) green	red (595-612mμ)	a) red b) blue c) green d) yellow e) purple	a) red: red filter. b) blue: complement of red background. c) green: produced in neutral areas by ambient illumination. d) yellow: projected red plus green ambient. e) purple: projected red plus induced blue.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
19) 640 & 678mμ (cont'd)	d) yellow	red (595mμ)	a) red b) blue c) purple	a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue.
20) 640 & None	a) white	red (587-612mμ)	a) red b) blue c) purple d) yellow e) green	a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue. d) yellow ? e) green ?
	b) red	red (587-612mμ)	a) red b) blue c) purple	MISSING: green, yellow a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue.
		yellow (572-575mμ)	a) red b) yellow	MISSING: blue, green, purple a) red: red filter. b) yellow: background.
	c) green	red (587-612mμ)	a) red b) blue c) green d) yellow e) purple	a) red: red filter. b) blue: complement of red background. c) green: ambient illumination. d) yellow: projected red plus ambient green. e) purple: projected red plus induced blue.

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
20) 640 & None (cont'd)	d) yellow	red (612mμ)	a) red b) blue c) purple	MISSING: green, yellow a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue.
21) 678 & None	a) white	red (587-612mμ)	a) red b) blue c) purple	MISSING: green, yellow a) red: red filter. b) blue: complement of red background. c) purple: projected red plus induced blue.
		purple (498c-561c mμ)	a) yellow b) blue c) purple	MISSING: red, green a) yellow: complement of background of 561c. b) blue: complement of background of 498c. c) purple: background.
	b) red	green-green-yellow (515-572mμ)	a) red b) yellow c) purple	MISSING: green, blue a) red: red filter. b) yellow: background color (572). c) purple: complement of background (500-550).

TABLE 15. Hues Produced by Various Filter Combinations Under Different Conditions of Ambient Illumination (continued)

PROJECTION FILTER COMBINATION	AMBIENT ILLUMINATION (MODAL RESPONSES)	PERCEIVED BACKGROUND (MODAL RESPONSES)	PERCEIVED STIMULUS HUES	COMMENT
21) 678 & None (cont'd)	c) green	yellow (572-587mμ)	a) yellow b) green c) blue	MISSING: red, purple a) yellow: background. b) green: ambient illumination. c) blue: complement of yellow background.
	d) yellow	red (595-612mμ)	a) red b) blue c) purple	MISSING: green, yellow a) red: red filter. b) blue: complement of background. c) purple: projected red plus induced blue.

combination only if it occurred at least 5% of the time (i.e., occurred about 15 times). As with the Broad Band data, the missing hues are listed as well as an explanation of the perceived hues in terms of classical color mixture theory and color induction.

SECTION 4

DISCUSSION OF RESULTS

4.1 BROAD BAND

As can be seen in Tables 11, 12, and 13, the fidelity with which a two-component color system, such as the one here, can be expected to produce the actual hues and saturations photographed, is quite low relative to a three component system. Of the twenty-seven experimental conditions employed, the greatest number of correct hue responses was four in a series of nine. In addition, and probably contributing to the problem of hue fidelity, is the observation that stimuli frequently tend to become desaturated relative to the original stimulus material.

The other (and perhaps more important) practical consideration - the extent of the range of colors obtainable with a two-color system - seems to receive a more promising answer. Table 14 shows that with certain combinations of projection filters and the density combinations employed here, a full range of colors is attainable. Although only two (green and red, and green and incandescent) of the nine projection conditions employed here yielded a full range of colors, it is quite possible that with different density combinations some or all of the other conditions would have yielded these colors. On the basis of this finding, two-component colored displays are shown to have utility, at least in special situations where the additional saturation to be had with a three-component system is unnecessary.

Also presented in Table 14 are possible explanations, within the framework of classical color mixture theory, of why these hues were perceived as they were. With the additional, well-supported assumption concerning induced colors, it is seen that classical color mixture theory is adequate to explain all of the hues reported here. It should be noted, however, that these explanations are not intended to be complete, that is, there may be, and probably are, other explanations equally valid to explain any given perceived color.

Figures 5 through 8 show that the data from the present study, for the most part, agree with Land's (1959 a) plot of perceived hues as a function of transmission of the long and short records. In a few cases, hues appear on the "wrong" side of the neutral line representing equal densities, however, the distance from the "correct" position is always small.

It should be noted that the data presented in the Broad Band Results section represents modal responses of twenty trials per cell. An indication of the spread of these responses, necessary for any practical applications, can be obtained from Appendix C in which the raw data are presented.

4.2 THEORETICAL ANALYSIS*

A small portion of the experimental color data obtained under the present contract was used to check the color theory proposed earlier by Yilmaz (1962). The theory is found to be quantitatively consistent with the data. The small quantities ξ, η, and ζ** were not possible to evaluate exactly due to larger individual errors of observation. It was concluded that the introduction of a curved color space is not necessary to cover the data although there were indications that metric behavior might not be valid rigorously. In reaching these conclusions use was also made of an earlier work by Burnham, Evans, and Newhall (1957). A brief summary of the analysis follows.

According to our color theory the situation arising in a transformation from one illuminant to another can best be described with our α, β, γ coordinate system. Since this system is rather unfamiliar at the present time, we will try to case the conclusions into

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*This theoretical evaluation was published as Applied Research Laboratory RR No. 338 by H. Yilmaz and G. Biernson and was supported under Contract No. AF33(657)-8681.

**See Section 1.3.

a slight generalization of the C.I.E. chromaticity diagram. For our immediate purpose the generalization consists essentially of introducing small nonhomogeneous terms into the transformation formulae.

In Figure 9 the plane, γ = constant, corresponds roughly to $X + Y + Z = 1$. On this plane a chromaticity diagram (a) is indicated. The projection of this diagram on the XY plane is the usual C.I.E. chromaticity diagram (b). The projection of the illuminant C is indicated as C. A psychological maximum saturation curve, Σ, is indicated as a circle (idealized theory) on the $X + Y + Z = 1$ plane. The projection of this on the XY plane will be an ellipse. According to the idealized theory a change in illuminant from γ to γ' carries C to C' and consequently C_1 is carried to C_1'. Similarly, every point of the plane is carried uniquely to another point. In particular, every closed curve around C is carried to another closed curve around C'. The same is true for their projections on the chromaticity diagram.

Figure 10 shows on the C.I.E. diagram contours of constant Munsell chroma under different illuminations as determined from the transformations performed by Burnham, Evans, and Newhall (1957). The illuminants are the standard C.I.E. illuminants C and A and a green illuminant which Burnham, et al, refer to as G. Contours are shown for all three illuminants for Munsell value 5 and chroma 2 and 4. The corresponding contour for chroma 8 is also shown for illuminant C. The Munsell chips to be discussed in the Sylvania color matching experiments lie along this chroma 8 contour.

According to the theory, the projected curves are slightly shifted due to the small inhomogeneous terms ξ, η, and ζ so that γ' line does not meet γ at the origin, 0, as in the classical theories. Rather a new origin, 0', is formed and γ' meets α' and β' at this new origin (Figure 9). For example, in considering the curve around A when the transformation is from C to A the curve is to be shifted slightly in the direction of A. This shift in itself would be

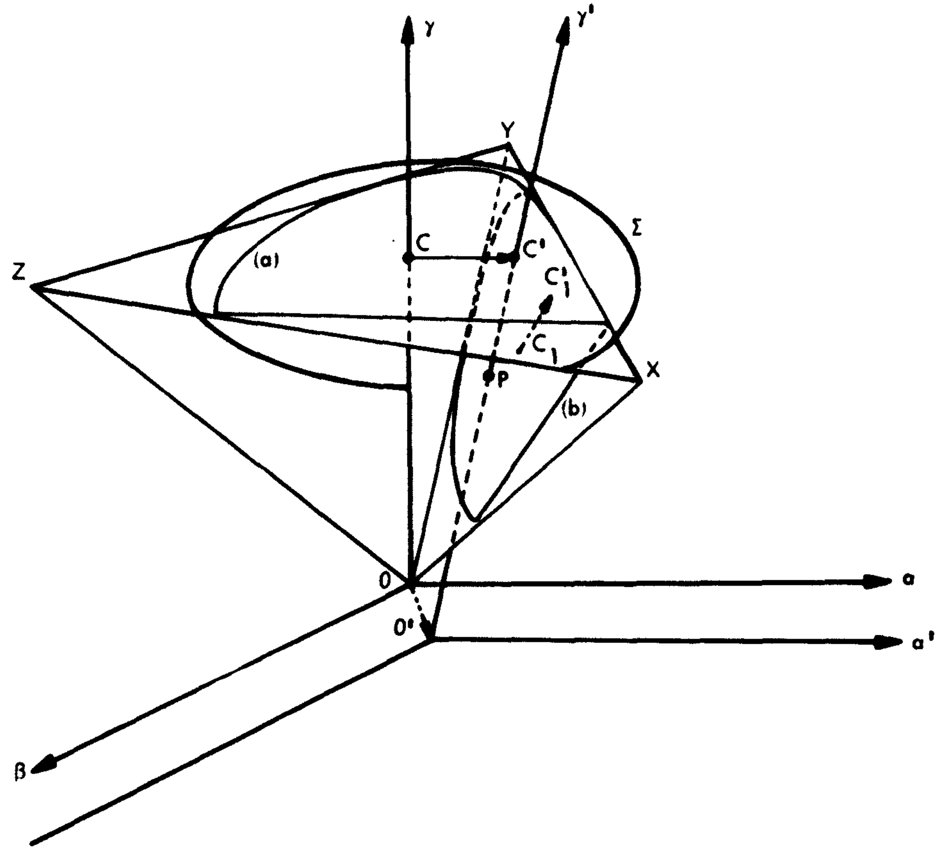

Figure 9. Illustrating the Relationships Between the Theory and the Transformations on the C.I.E. Chromaticity Diagram

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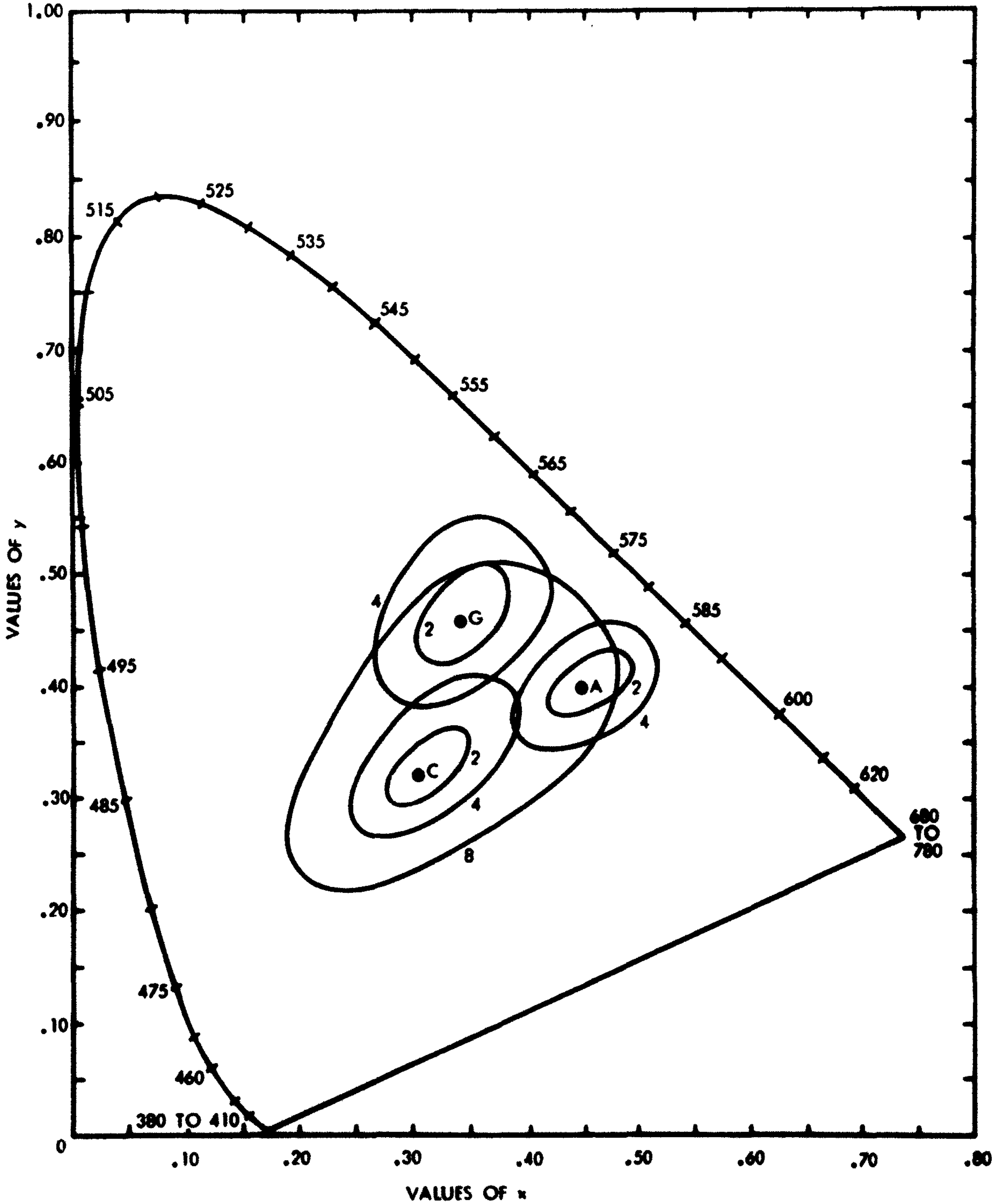

Figure 10. Contours of Constant Munsell Chroma Showing the Effect of Transformation from Illuminant C to Other Illuminants Which Correspond to C in Figure 10, (From Transformation Relation by Burnham, et.al.)

insignificant since it is rather small (in the transformation by Burnham, et al, $\xi \cong .0020$, $\eta \cong .0010$, $\zeta \cong .0025$). However, they lead to large qualitative effects in certain special cases. To see this, consider an image generated by two wavelengths, say, 548 mμ and 627 mμ. All the samples of the image will be on the XOY plane, and the samples exhibit all hues, since now they can be arranged circularly around the achromatic point P, as shown in Figure 11.

Sylvania has performed color matching experiments to evaluate the color fidelity achieved by two-color projections. An array of Munsell chips was photographed on black-and-white film through various filters, and pairs of the resultant slides were projected on the screen through various filters. The observed colors were matched to standard Munsell chips in a viewing box, illuminated with C.I.E. standard illuminant C. Figures 12-17 show the results achieved by a sample of this data.

For the data chosen, the Munsell chips were photographed through green and red filters, Wratten Nos. 11 and 29. The projector used a Sylvania DDB 750 watt lamp. Two projections are considered:

Normal Projection: The slides taken through the green and red filters are projected back through the same filters.

Reverse Projection: The green slide is projected through the red filter, and the red slide is projected without a filter.

Figures 12-14 show the results of the normal projection for three subjects, and Figures 15-17 show the results of the reverse projection for the same three subjects.

Figure 12 shows the results of the color matching for Subject 1 for normal projection. The outer contour shows the Munsell contour for value 5, chroma 8. On this contour are shown points 1, 6, 8, 9, 5, 11 which represent the 6 sample chips to be considered in this discussion. When these chips were photographed and projected in a two-color projection, the resultant projections appeared to have the colors shown by the inner contour. This inner contour

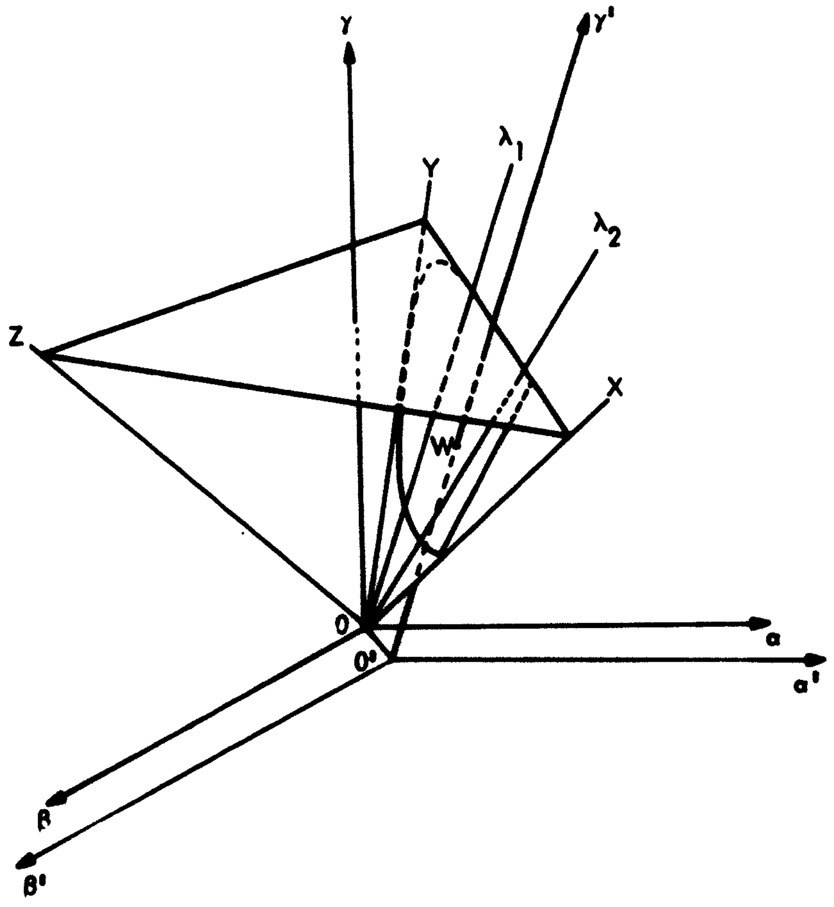

Figure 11. Showing the Transformation in a Two-Color Projection. The New Axis γ' Cuts the X0Y Plane at W Due to Shift from 0 to 0' of the Origin

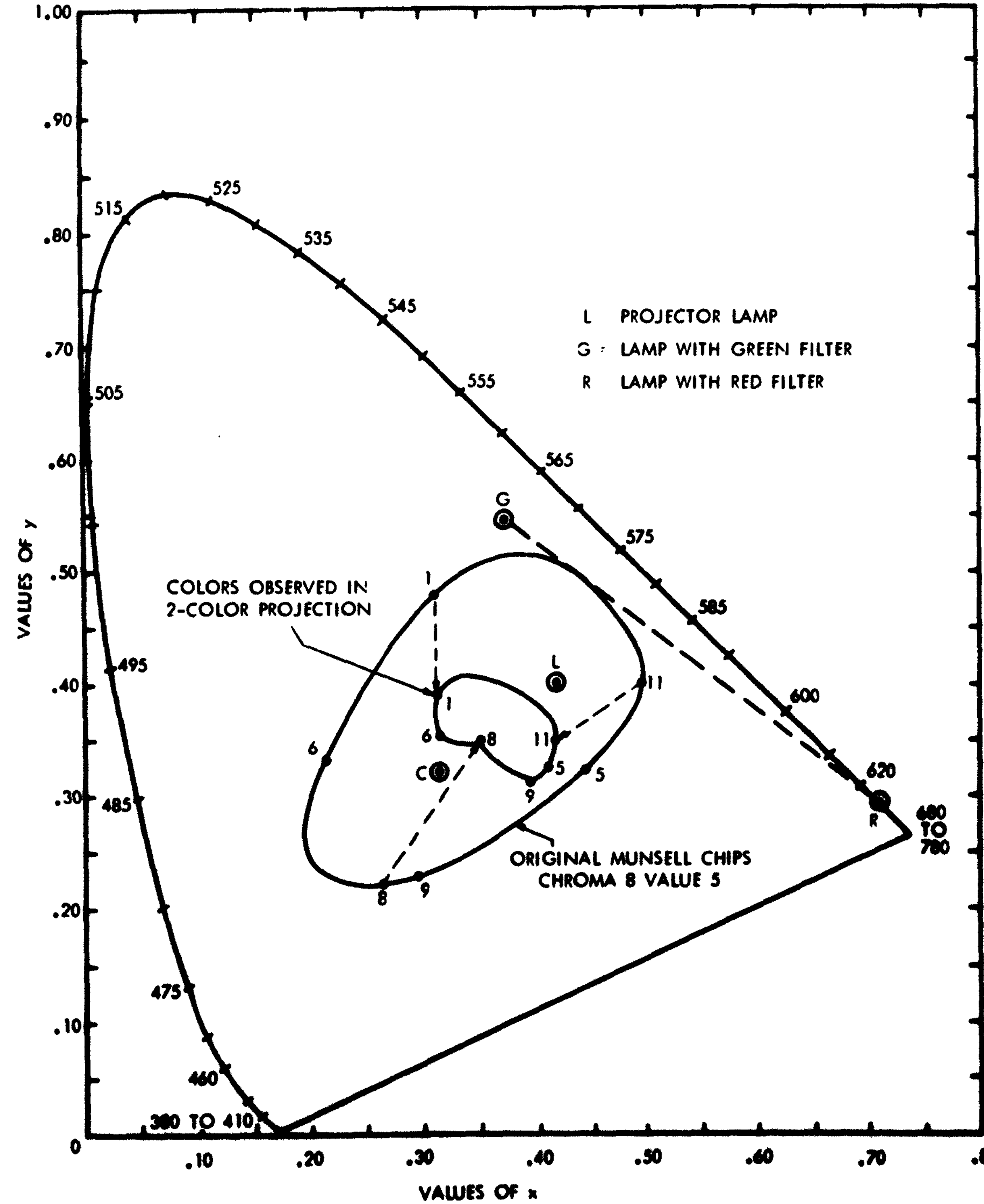

Figure 12. Colors Observed by Subject (1), Normal Projection with Green and Red Filters (Wratten 11 and 29 with Sylvania DDB 750 W Lamp)

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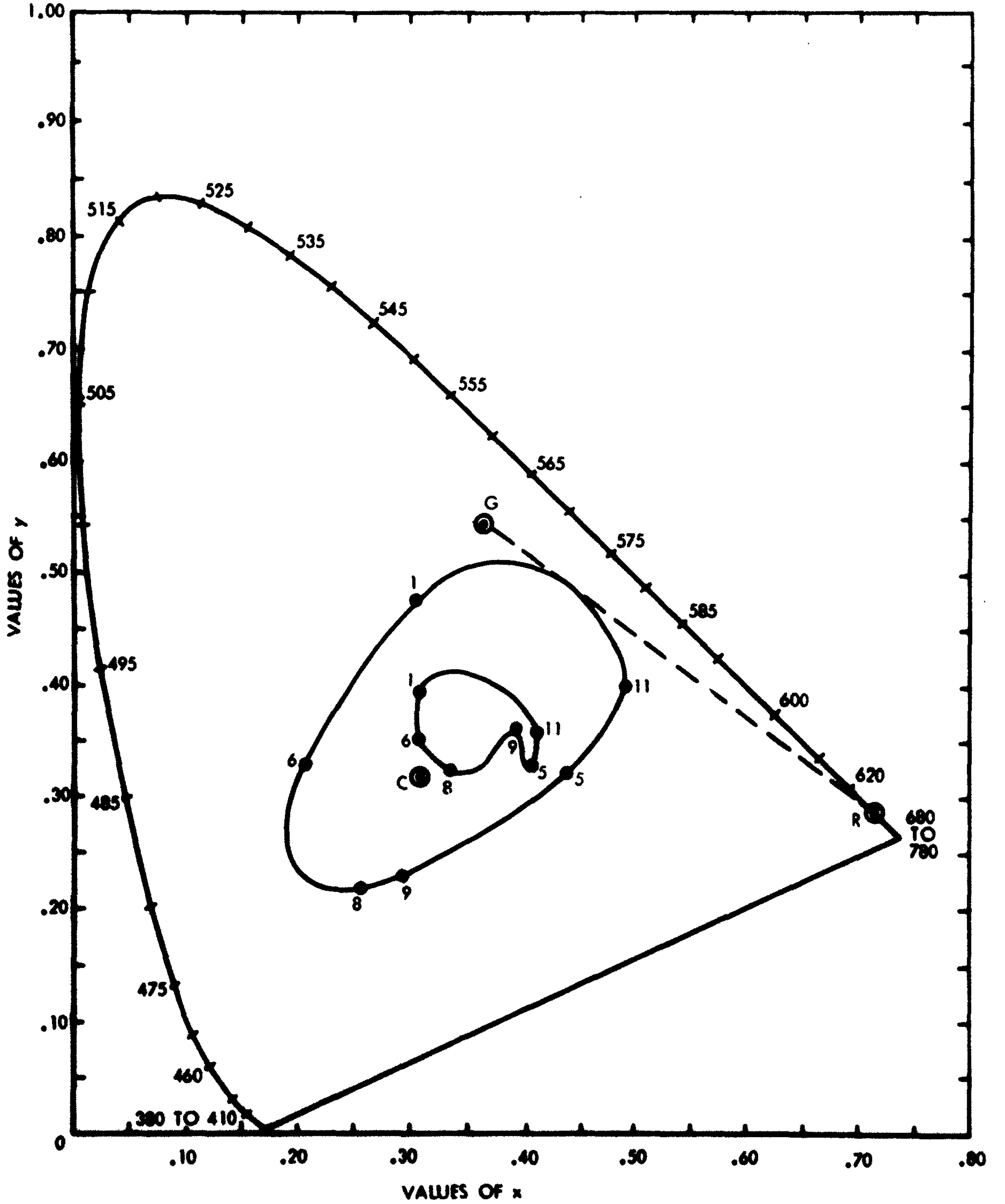

Figure 13. Colors Observed by Subject (2), Normal Projection

7-2-0080

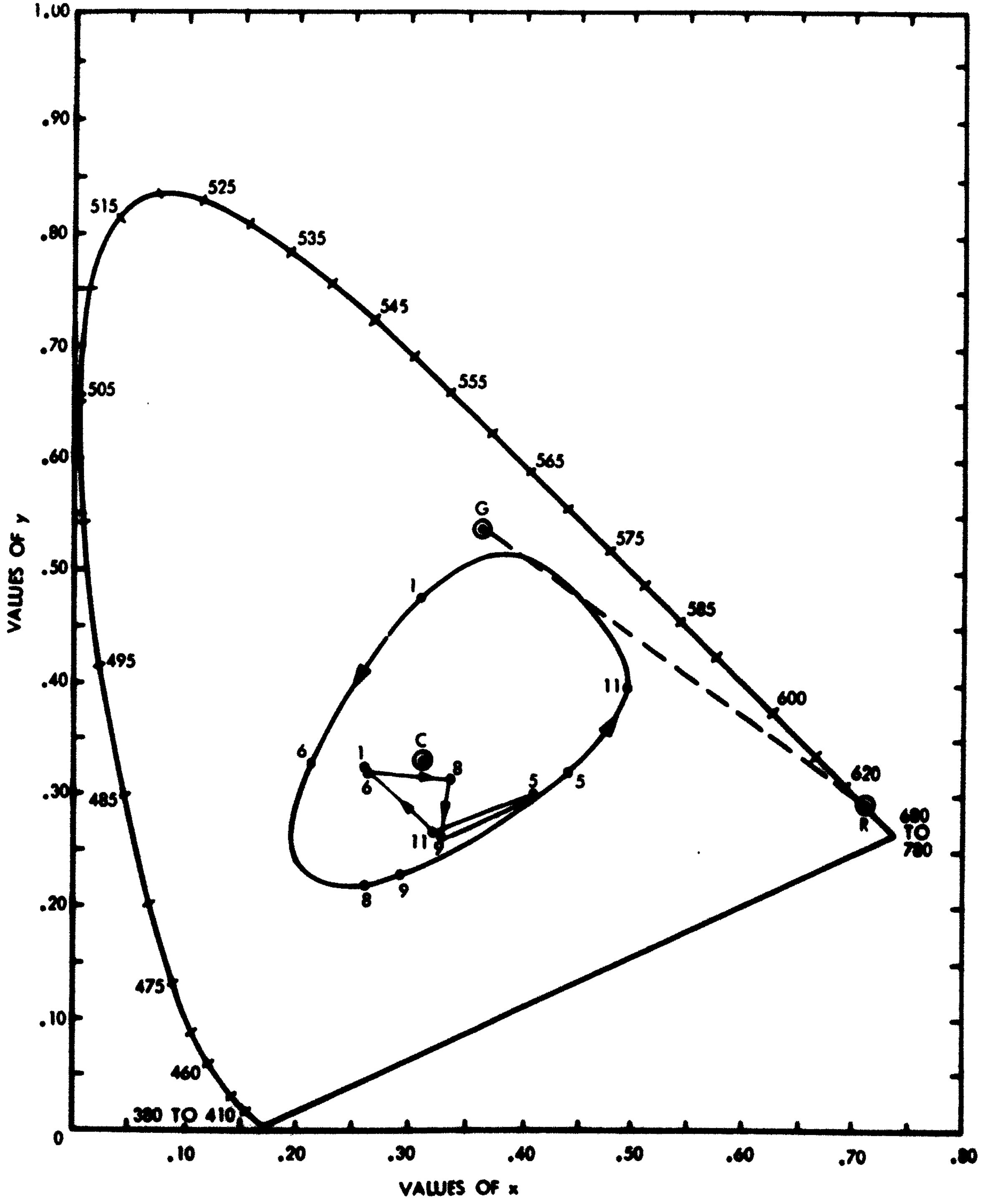

Figure 14. Colors Observed by Subject (3), Normal Projection

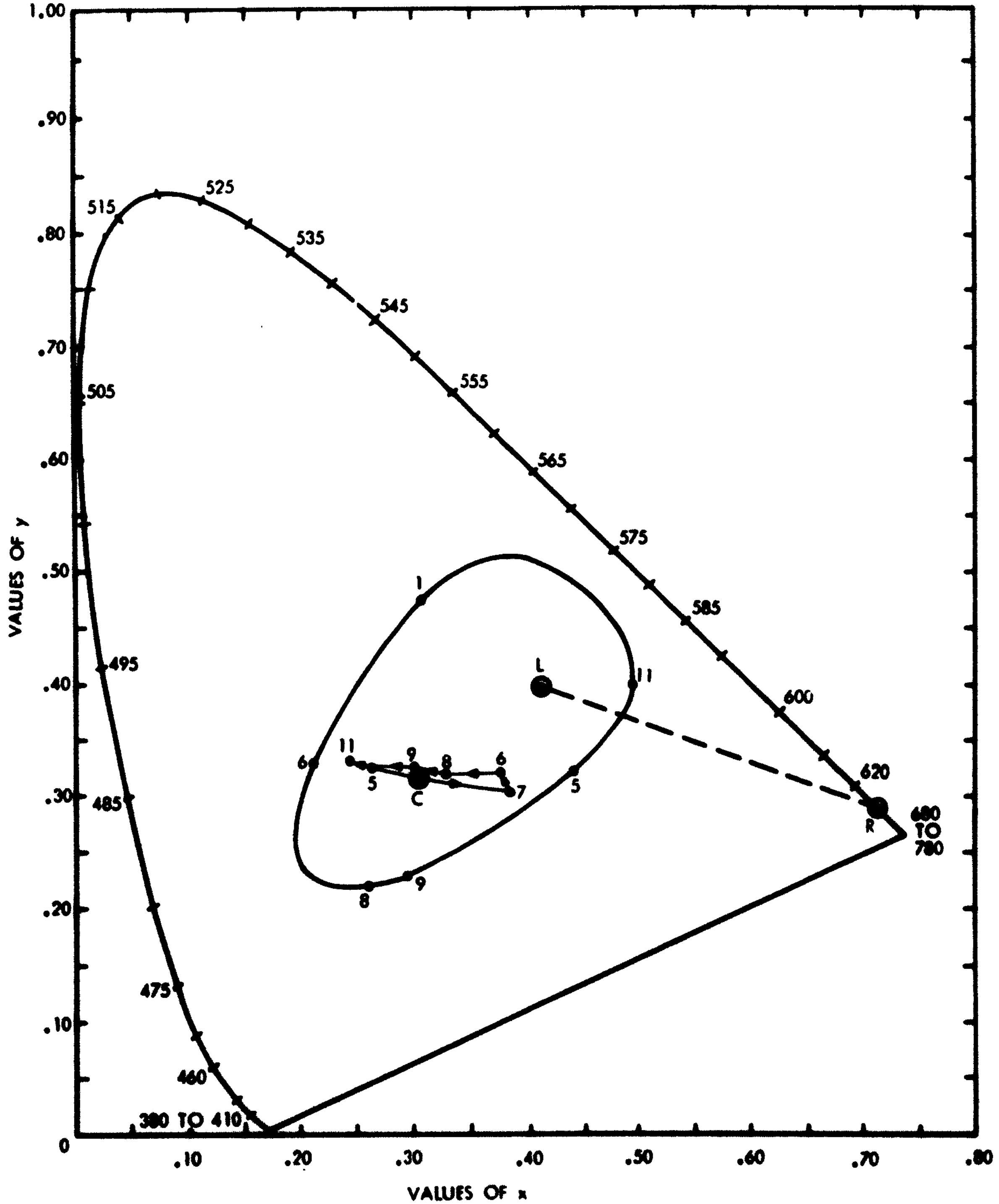

Figure 15. Colors Observed by Subject (1), Reverse Projection (Red Filter Over Green Slide, No Filter Over Red Slide)

7-2-0082

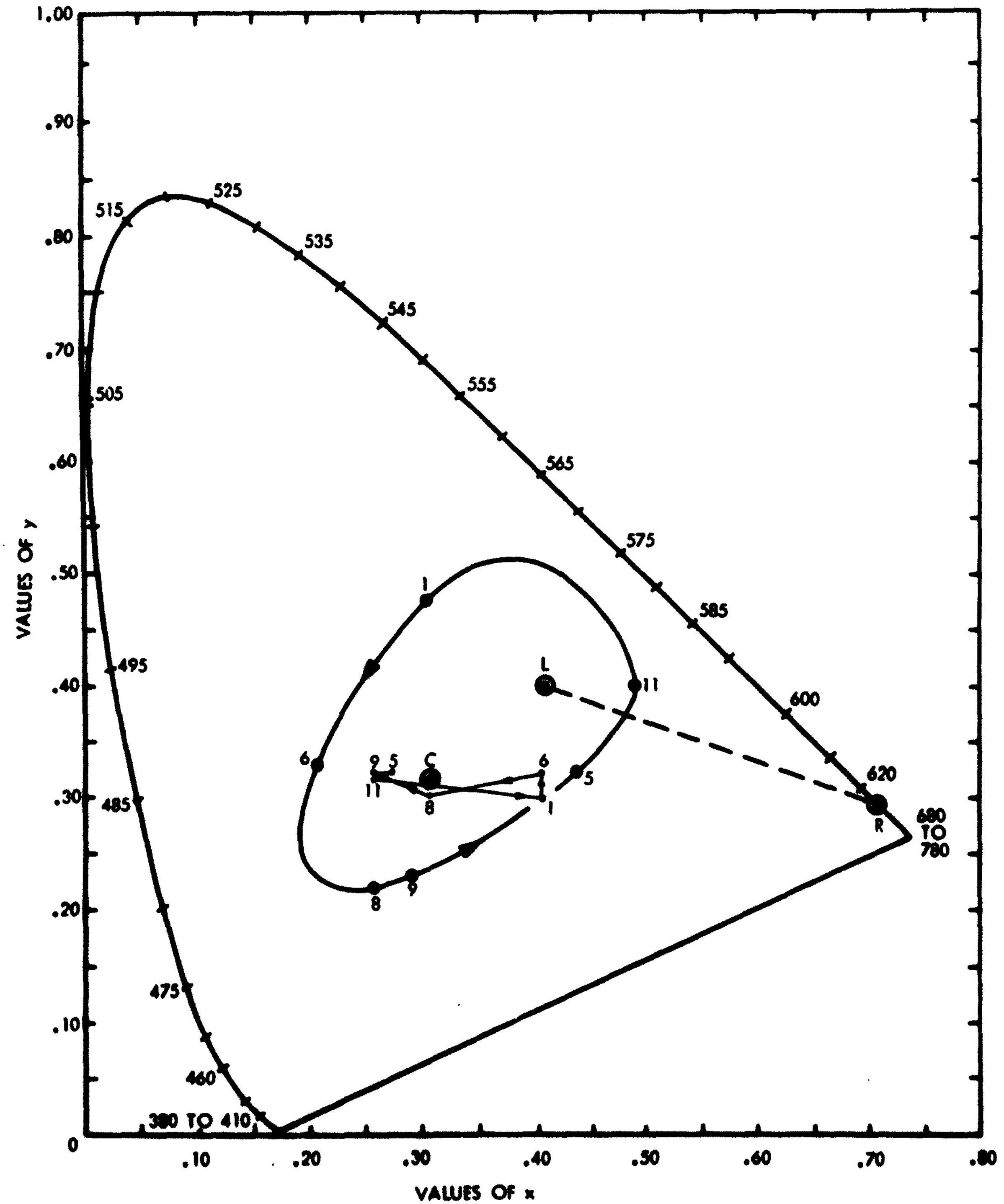

Figure 16. Colors Observed by Subject (2), Reverse Projection

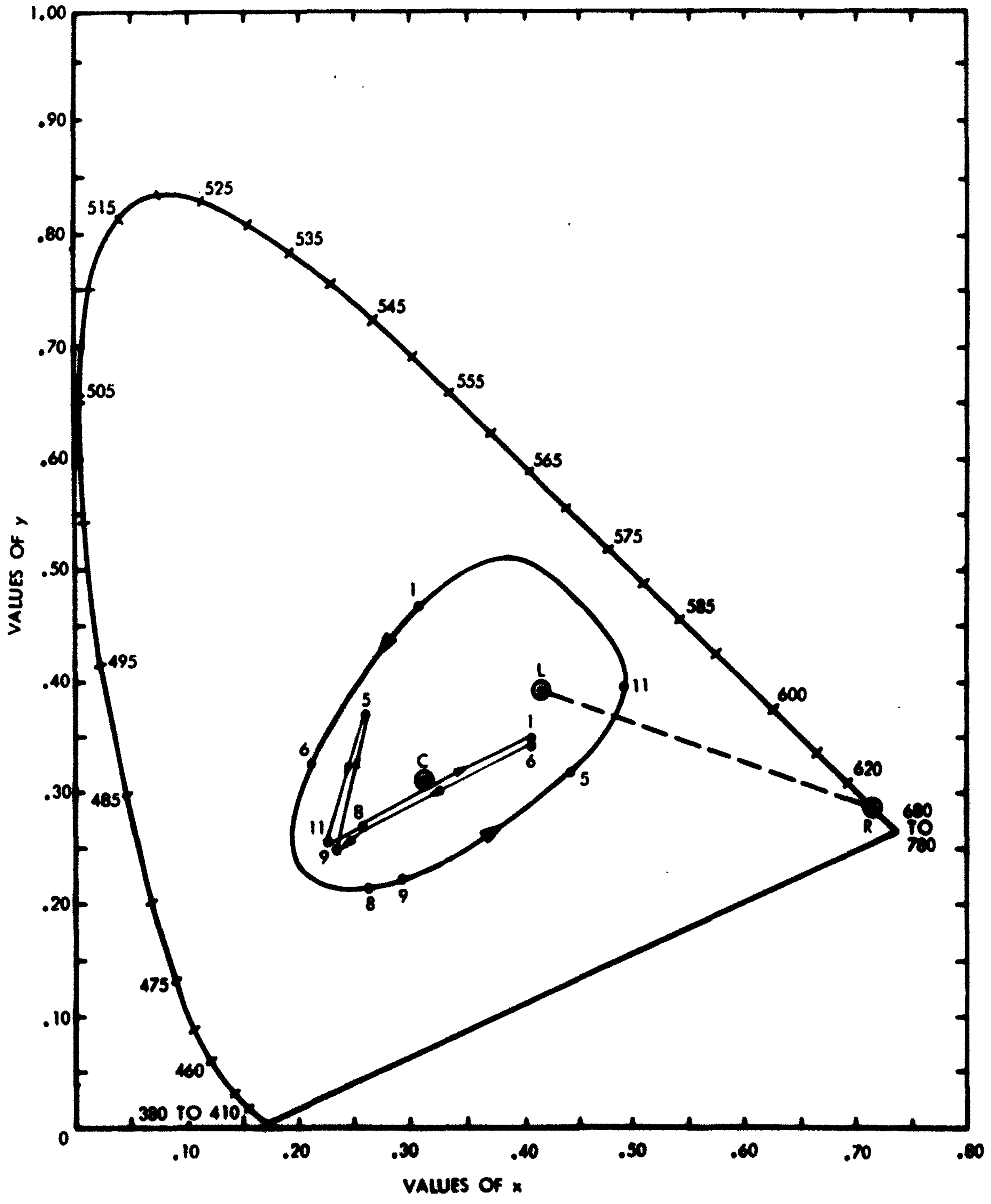

Figure 17. Colors Observed by Subject (3), Reverse Projection

gives the trichromatic values of the Munsell chips in the viewing box that were matched to the projected pictures of the chips. The dashed arrows show the shifts of the original Munsell colors to the colors observed in the two-color projection.

Figure 12 shows, as point C, the trichromatic values for C.I.E. standard illuminant C. This represents the white reference point for the two contours, since they are both related to illuminant C. The figure also shows as points L, G, and R the trichromatic values for the projection lamp alone, and the projection lamp with green and red filters, respectively.

Classical concepts of color transformations would indicate that the observed colors should lie on a straight line parallel to the dashed line between G and R. However, due to the "Land effect" an ellipse is formed, although there is contraction perpendicular to the R-G line. This effect, as well as the disaturation of the colors, is consistent with the Yilmaz theory.

Figures 13-14 show the results of two other observers for the same experiment as Figure 12. As shown in Figure 13 Subject (2) is consistent with Subject (1) and has an even fuller range of color (i.e., less contraction perpendicular to the R-G line). However, the results of Subject (3) (Figure 14) are very erratic, and inconsistent with the results of the other two subjects. It should also be noted that they lie on the opposite side of illuminant C.

(It is interesting to note that Subject (3) was a very conscientious observer, and could consistently make perfect or near perfect scores in identifying from memory 52 Munsell chips. The reasons for the discrepancy in the data between his values and those of Subjects (1) and (2) are therefore not apparent.)

Figure 15 shows the colors matched by Subject (1) when the green slide is projected through the red filter and the red slide through no filter. This result is in agreement with the classical concept and

is consistent with the Yilmaz theory. The data forms a straight line essentially parallel to the line L-R between the projection chromaticity points of the two projection lights. Because of the reversal of the slides, there is a reversal of the points between the inner and outer contours (e.g., points 6 and 11 on the inner contour lie opposite the corresponding points on the outer contour). To clarify the transformation mapping, the arrows on the inner contour show the direction corresponding to counter-clockwise rotation on the outer contour.

Figures 16 through 17 show the reverse-projection color matches for Subjects (2) and (3) for the same conditions as that for Subject (1) shown in Figure 6. Again it should be noted that Subject (2) is consistent with Subject (1), whereas Subject (3) varies markedly.

4.3 NARROW BAND

As in the case of the broad band data, the narrow band data indicate that the degree of fidelity attainable with a two-component color system is far inferior to the fidelity of a three-component system with respect to both the hue and saturation. Approximately 25% of the narrow band filter combinations and conditions of ambient illumination resulted in a full range of perceived colors, although the saturations in general were lower than those of the stimulus material. It can be seen from the narrow band data in Appendix C, however, that careful attention to density combinations can result in a full range of hues and relatively high saturation levels. To illustrate this, Table 16 presents the densities of the short and long records which produce each of the major colors at the greatest value of excitation purity obtained.

Table 16. The Optical Densities of Short and Long Records Which Produced Each of the Five Major Colors.

OPTICAL DENSITY

Short Record	Long Record	Hue	P_e
1.08	0.79	Red (595mμ)	54
1.62	1.25	Green (551mμ)	31
1.48	1.35	Yellow (575mμ)	61
1.20	1.32	Blue (455mμ)	24
0.79	0.75	Purple (538c mμ)	32
0.52	0.44	Purple (561c mμ)	24

In addition to the hues indicated, intermediates such as blue-green, green-yellow, etc., were also obtained.

As was done with the broad band data, possible explanations based upon the law of intermediates and simultaneous contrast are presented in Table 15. Unlike the broad band data, however, these principles, while they explain more than 90% of the hues, fail to explain about 5%.

The results of this study, then, indicate that two-component color systems are acceptable for color displays, particularly when high saturations are not necessary.

SECTION 5

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APPENDIX A

TRISTIMULUS VALUES FOR PROJECTION LAMP AND COLORED FILTERS

	X	Y	Z
1. Lamp alone (Sylvania DDB 750w)	574.12	547.70	256.86
2. Lamp plus broadband filters			
47B	11.55	1.51	57.53
11	140.13	206.78	34.15
29	135.70	55.80	0.01
3. Lamp plus narrowband filters			
CS 5-74	36.15	3.58	187.08
CS 4-104	1.69	10.06	19.21
CS 4-105	40.19	229.97	66.22
W-73	97.76	108.04	0.26
CS 2-78	136.99	55.23	0.00
W-70	7.16	2.61	0.00

4. Tristimulus Values for Bulbs which Provided Ambient Illumination

Lamp	Volts	X	Y	Z
Soft White	120	1236.6	1114.5	353.9
Yellow	120	1117.5	582.2	0.0
Red	120	341.8	137.1	0.0
Green	120	286.0	536.2	340.0

APPENDIX B

PREPARATION OF NARROW-BAND SLIDES

B.1 INTRODUCTION

It was desired to prepare six positive projection slides, each of which corresponded to the view through a different "narrow-band" filter of the same scene. The scene consisted of a fixed array of eleven Munsell color chips chosen in a roughly random fashion from the Munsell color book. The principle characteristic desired in each slide was this: that when the slide was uniformly illuminated, the ratio of the amounts of light transmitted through the images of the various chips would be the same as the ratios of the amounts of light originally reflected from those chips and passed through a narrow-band filter at the time the scene was photographed. The reduction of this simply-stated desire to the existing set of slides involved careful consideration of the nature of filters, illuminants, photosensitive emulsions, the development process, and densitometry, and furthermore, the use of many cut and dry methods. Some of these matters are discussed in brief below.

B.2 FILTERS

The six filters employed in photographing the Munsell chips are listed below. For each of the first five filters the value is also given of: its peak transmittance (T max), the wavelength of peak transmittance (λ max), and the width of its transmittance between wavelengths at which its transmittance was equal to 1/2 T max($\Delta\lambda_{1/2}$).

The sixth filter was not truly narrow-band at all. However, among the readily available glass or gelatin filters it was not possible to find one with narrow-band transmittance in the desired far red region of the spectrum (~ 670 mμ). The actual characteristic of the compromise filter is that its transmittance rises from 10% at 660 mμ to 80% at 700 mμ. Information on its transmittance curve at wavelengths greater than 700 mμ is not available.

TABLE B-1

Filter #	Type*	T_{max} (in %)	λ_{max} (in mμ)	$\Delta\lambda_{1/2}$ (in mμ)
1	*CS 5-74	15	430	40
2	*CS 4-104	7	485	30
3	*CS 4-105	11	515	40
4	W-73	9	575	35
5	*CS 2-78	17	640	55
6	W-70	~80	$\gtrsim$700	$\gtrsim$100

*The four filters marked with an asterisk (*) are products of Corning Glassworks. The other two are products of Eastman Kodak.

However, an <u>effective</u> value of its upper wavelength of transmittance is set by a combination of factors, including:

(a) Sharp decrease in sensitivity of the emulsion at long wavelengths (~ 870 mμ).

(b) Declining transmittance of optical elements at long wavelengths.

(c) Decreasing emission of light source at long wavelengths.

The values listed for this filter under the headings λ_{max}, T_{max}, and $\Delta\lambda_{1/2}$ are merely rough estimates based on these considerations.

B.3 ILLUMINANT

The characteristics desired for the illuminating source used in photographing the color chips were as follows:

(1) It should give a steady illumination over the several hour period required to make all six exposures.

(2) It should illuminate all chips as uniformly as practicable.

(3) Preferably, its spectrum should approximate that of a C-source (where all the filters of arbitarily narrow bandwidth, the spectrum of the illuminant would be immaterial to the attainment of the correct ratio of chip-densities on any one slide. With the moderate bandwidths of the filters used, however, the relative chip densities of a given slide would vary somewhat with the spectrum. It was therefore decided to use an approximation to the most common of the standard colorimetric illuminants - the C-source.)

These requirements were met to a satisfactory degree by constructing an almost totally enclosed lamp housing supplied with forced air cooling. In order to prevent stray reflections from colored surfaces (which would have altered the uniformity and spectrum of the illuminant), the size of the exit aperature was chosen to produce a beam of width just sufficient to illuminate the scene. To further reduce secondary reflections, nearby walls and bench surfaces were covered with a dull, black cloth. The distance from lamp to scene was chosen sufficiently large to produce illumination uniform to within a few percent.

The flat tungsten ribbon of the projection lamp was supplied with current through an ammeter which was periodically monitored. The current was adjusted to produce such a color temperature of the emitted light that, when the light was passed through an available color-correcting filter, a C source would be approximated.

B.4 PHOTOGRAPHIC PROCESS

When a photographic emulsion is exposed in a camera to a scene consisting of areas of different brightness, it is found upon development that the optical density of each area of the resulting negative varies with the corresponding brightness as indicated in Figure B-1.

The density is defined as the negative logarithm to the base 10 of the fraction of light transmitted by the negative. ($D = -\log_{10}T$). Between the point a, slightly above the threshold, and the point b,

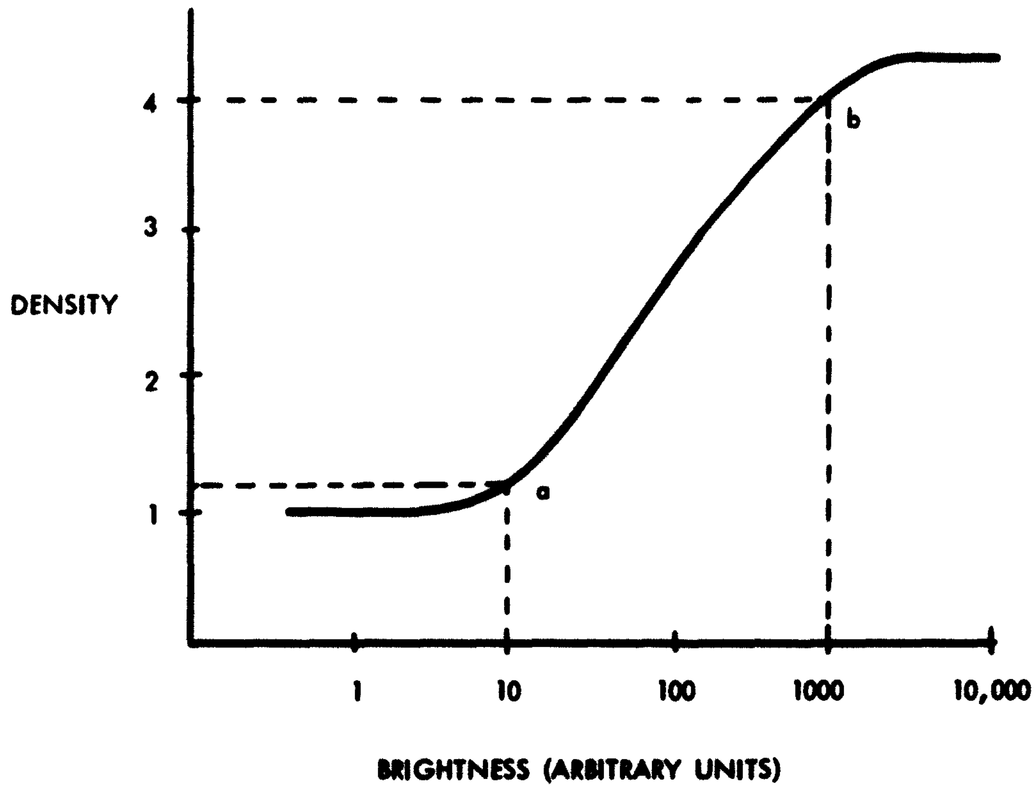

Figure B-1. Photographic Sensitometric Curve Showing Dependence of Image Density on Object Brightness

slightly below saturation, the curve of Figure B-1 can be represented with fair accuracy by a straight line of slope, γ.

$$\frac{dD}{d(\log B)} = \gamma : \qquad D_a < D < D_b$$

In this linear region of the films characteristic curve, the density is thus given by

$$D = D_a + \gamma \log_{10}(B/B_a)$$

and hence the transmission is given by

$$T = T_a(B/B_a)^{-\gamma}$$

If the negative be uniformly illuminated, the light transmitted is given by

$$I = I_a(B/B_a)^{-\gamma}$$

If the negative is printed on a second piece of film, (using such an exposure that the linear portions of the characteristic curves of the two films "overlap"), then development will yield a positive whose transmittance is given by

$$T'/T'_a = (B/B_a)^{\gamma\gamma'}$$

where γ' is the contrast (gamma) of the positive. If the positive is projected on a viewing screen, the observed brightnesses of various areas are given by

$$I'/I'_a = (B/B_a)^{\gamma\gamma'}$$

From an examination of this equation, it is apparent that, even though linear characteristic curves are assumed, the brightness

of images on the screen is generally not a linear function of the brightness of corresponding objects in the photographed scene. That linear relationship, which is the one desired, occurs only when the product of the negative's contrast (γ) and of the positive's contrast (γ') is unity:

$$\gamma\gamma' = 1 \quad .$$

Much of the time consumed in preparing the slides was directed toward achieving the value of $\gamma\gamma' = 1$.

B.5 EXPERIMENTAL PROCEDURE

The value of gamma (γ) achieved on a particular sheet of film depends critically on all of the following factors:

(1) Nominal film type.

(2) Batch number of the manufacturing run.

(3) Age and other influences (e.g., humidity) which have affected the film since manufacture.

(4) Type and condition of developer.

(5) Developer temperature.

(6) Amount of agitation used during development.

(7) Time of development.

(8) Time of exposure.

(9) Wavelength of light used for exposure.

Data available from manufacturers about how the gamma of a given film depends on all these factors is necessarily approximate, though useful as a guide. For the present work the procedure followed was to fix as many factors as was practical and calibrate the films against the remaining variables. In particular, the factors 1 through 6 were fixed, while 7, 8, and 9 were variable. This meant that the effect of development time and exposure time on contrast had to be explored for each of the six filters.

The film selected for use with filters 1 through 5 was Kodak Super XX. Unfortunately the sensitivity of this panchromatic emulsion falls off precipituously in the wavelength region in which filter 6 has appreciable transmission, so it was necessary to substitute Kodak Infra-Red Film for use with this filter. The basis for choosing these films were:

(1) Wavelength regions of sensitivity.

(2) Linearity of the region between points a and b on their sensitometric curves (see Figure B-1).

(3) Length of region between a and b. (This amounted to about two decades, i.e., a factor of 100 in illumination for Super XX, and about one and a half decades for the Infra-Red film, i.e., a factor of 30 in illumination.

Following a preliminary calibration procedure for the two emulsions with appropriate filters, values of exposure time were selected such that a γ of unity would be approximated on each negative. Values of exposure time were selected which would place the density of the image of the white chip comfortably below the saturation point, b, on the sensitometric curve. A grey scale was included in the scene, so that by measuring its image on each negative with a densitometer it was possible to determine the value of γ achieved. Densitometric readings also allowed a check of individual chips to insure that the density of each lay within the linear region a to b. (Figure B-1.)

Finally, densitometry of the background of the chips revealed a residual lack of uniformity in the illumination of the scene. To eliminate this effect, correcting masks were prepared by photographing a blank white sheet of cardboard (with no chips mounted on it) under the same conditions of illumination used for photographing the mounted chips. Positives were made from these negatives and superposed on the negatives of the chips. These compound films were then contact-printed on Super XX, the development time being chosen to give $\gamma' = 1/r$ in each case, while the exposure time was selected to make the density of the white chip as small

as possible without departing from the film's linear region. The value of $\gamma\gamma'$ was checked by densitometric readings of the grey scale on each positive. The values of $\gamma\gamma'$ achieved are listed in Table B-2 along with the density of the white chip's image.

TABLE B-2

Filter #	Filter Type	$\gamma\gamma'$	Density of White Chip
1	CS 5-74	0.97	0.43
2	CS 4-104	1.03	0.45
3	CS 4-105	1.00	0.64
4	W-73	1.00	0.62
5	CS 2-78	0.97	0.35
6	W-70	1.03	0.55

The positives so prepared were trimmed and mounted in 35 mm slide binders. Care was taken to have the same orientation between subject matter and binder in each case, so that a minimum amount of adjustment of the two projectors would be needed to secure registration of any two slides on the viewing screen.

APPENDIX C

RAW DATA

C.1 BROADBAND

Table / Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair /

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	[illegible]	575	61	486	47	[illegible]	37	[illegible]	36	455	33	566	31	[illegible]	27	[illegible]	[illegible]	White	
ABSOLUTE JUDGMENT RESPONSE	JG	551	10	575	48	455	18	551	10	583	10	455	8	455	8	551	10	551	5	[illegible]	33
	JG	551	10	575	48	486	5	551	5	455	33	455	18	455	8	551	8	551	10	[illegible]	33
	WW	575	18	575	48	455	18	575	18	486	7	455	26	486	25	575	11	575	18	[illegible]	[illegible]
	WW	575	18	575	48	486	7	575	11	486	7	456	37	[illegible]	[illegible]	575	15	575	11	486	25
	MC	575	48	575	48	486	7	575	30	575	18	455	26	455	18	575	48	575	30	486	[illegible]
	MC	575	48	575	61	[illegible]	[illegible]	575	30	612	9	486	30	486	15	575	30	575	8	486	25
	VC	566	33	575	61	486	5	551	10	612	9	455	33	566	24	587	18	551	[illegible]	[illegible]	[illegible]
	VC	551	31	575	42	486	22	551	10	587	8	[illegible]	[illegible]	455	12	566	8	551	5	White	[illegible]
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	551	20	575	48	455	18	551	5	575	18	455	26	455	33	575	11	575	47	486	5
	WW	575	32	575	61	[illegible]	[illegible]	575	11	486	7	455	33	455	26	575	11	575	[illegible]	[illegible]	26
	MC	575	61	575	61	486	25	575	48	575	48	487	37	486	25	575	[illegible]	575	61	[illegible]	[illegible]
	MC	575	61	575	61	455	18	575	48	575	48	455	33	455	18	575	61	[illegible]	[illegible]	[illegible]	[illegible]
	VC	551	31	575	30	486	4	551	5	587	8	455	26	455	18	551	[illegible]	551	31	[illegible]	
	VC	551	31	575	61	455	8	551	20	587	8	455	33	455	18	[illegible]	[illegible]	[illegible]	31	[illegible]	[illegible]
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	551	20	575	61	455	8	551	10	575	11	455	36	455	18	575	15	[illegible]	[illegible]	455	26
	WW	566	17	575	48	455	8	566	17	587	8	455	26	455	26	575	18	[illegible]	[illegible]	455	18
	MC	575	48	[illegible]	61	486	37	575	48	575	[illegible]	455	33	[illegible]	[illegible]	[illegible]	30	[illegible]	[illegible]	455	[illegible]
	MC	575	61	[illegible]	61	455	18	575	48	575	[illegible]	455	33	455	33	575	48	[illegible]	[illegible]	455	33
	VC	551	26	575	48	566	8	587	18	[illegible]	[illegible]	455	33	455	18	612	7	575	32	[illegible]	[illegible]
	VC	575	32	575	61	455	4	551	5	587	18	455	26	455	18	587	8	575	11	[illegible]	[illegible]

Table 2 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 2

STIMULUS NUMBER

	Subj	λ1	Pe	λ2	Pe	λ3	Pe	λ4	Pe	λ5	Pe	λ6	Pe	λ7	Pe	λ8	Pe	λ9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	496	7	612	37	492	36	455	33	566	31	499	27	587	68	white	
ABSOLUTE JUDGMENT RESPONSE																					
	JG	612	9	612	46	455	4	612	4	496	44	455	8	455	8	612	9	612	4	496	60
	JG	612	9	612	46	455	8	496	30	[illegible]	8	455	8	455	8	612	9	612	4	496	60
	WW	587	8	612	46	455	8	587	18	587	8	455	11	455	4	612	4	612	4	496	38
	WW	612	18	612	46	496	13	612	18	612	9	492	22	455	18	612	18	612	28	566	31
	MC	612	18	612	28	455	8	575	18	612	9	496	22	455	8	612	18	612	9	496	15
	MC	492	22	595	54	492	18	496	22	[illegible]	8	496	26	492	9	587	8	575	18	492	22
	VC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	26	[illegible]	[illegible]	[illegible]	37	[illegible]	[illegible]	[illegible]	[illegible]
	VC	612	18	612	60	[illegible]	15	612	8	[illegible]	18	455	33	455	8	612	18	587	53	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	612	18	612	37	455	18	566	17	566	24	455	26	455	26	612	18	612	28	566	31
	WW	612	28	612	37	496	13	455	18	496	15	455	26	455	26	612	18	612	28	498	15
	MC	612	37	595	54	496	37	496	30	496	30	455	33	455	33	612	37	612	37	566	31
	MC	612	37	595	54	455	33	496	30	612	18	455	33	455	26	496	30	496	30	566	31
	VC	587	68	612	37	566	24	587	35	612	9	455	26	455	18	612	18	587	53	white	
	VC	587	68	612	37	566	8	587	35	612	18	455	26	455	8	612	18	587	53	white	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	612	18	612	37	612	9	612	28	612	18	455	18	455	18	612	18	612	28	498	30
	WW	612	28	612	37	496	13	496	15	496	15	455	26	455	18	612	28	612	37	455	18
	MC	498	30	612	37	496	37	496	15	496	15	455	33	455	33	496	22	612	28	566	31
	MC	612	37	595	54	455	18	612	37	612	9	455	33	455	26	612	37	612	28	498	22
	VC	498	30	595	27	566	17	587	35	455	26	455	26	566	17	498	22	587	18	white	
	VC	587	68	595	54	566	17	498	15	612	18	455	26	455	18	612	37	587	53	white	

Table 3 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 3

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		557	40	575	61	486	47	612	37	492	36	455	33	566	31	499	27	587	68	Wh	ite
ABSOLUTE JUDGEMENT RESPONSE																					
	JG	551	10	575	48	566	4	551	5	551	5	455	8	455	4	566	8	551	10	455	70
	JG	551	10	575	48	455	8	551	10	587	8	455	8	455	8	551	5	551	10	455	70
	WW	575	18	575	30	455	4	575	11	575	11	455	18	455	8	575	18	575	18	Wh	ite
	WW	575	18	575	48	486	13	575	11	575	11	486	25	486	13	575	18	575	30	455	8
	MC	575	18	575	48	486	13	575	18	587	8	455	26	486	13	575	30	575	30	486	13
	MC	575	30	575	48	486	13	575	18	575	11	486	25	486	13	575	30	575	48	486	37
	VC	[illegible]	[illegible]	575	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	9	455	33	[illegible]	[illegible]	[illegible]	[illegible]	551	31	Wh	ite
	VC	572	32	575	48	[illegible]	15	577	35	587	8	455	33	455	18	587	18	551	10	Wh	ite
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	572	32	575	48	455	18	551	5	575	11	455	33	455	26	575	11	572	17	455	8
	WW	572	17	575	30	486	25	572	11	575	11	455	26	455	33	575	11	572	32	486	25
	MC	575	61	575	61	455	8	575	61	575	48	455	26	455	26	575	61	575	61	455	48
	MC	575	61	575	61	566	17	575	61	575	48	455	33	455	26	575	61	575	61	455	24
	VC	551	20	575	48	566	8	587	18	612	9	455	26	455	26	587	18	551	20	Wh	ite
	VC	551	20	575	30	566	17	551	10	587	8	455	26	455	18	587	8	551	10	Wh	ite
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	551	5	575	48	486	13	551	10	575	11	455	26	455	18	575	18	551	20	455	18
	WW	572	32	575	48	455	18	566	8	566	4	455	26	455	26	572	11	572	32	455	18
	MC	575	48	575	61	455	26	575	30	575	30	455	18	455	18	575	48	575	61	455	33
	MC	575	48	575	61	455	26	575	61	575	30	455	33	455	33	575	30	575	61	455	26
	VC	572	32	575	48	566	17	577	18	[illegible]	5	455	18	455	26	587	18	572	17	Wh	ite
	VC	551	10	575	48	455	8	587	8	612	9	455	26	455	18	612	9	572	17	Wh	ite

Table 4 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 4

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		587	[illegible]	575	61	496	47	612	57	492	56	455	33	516	31	499	27	587	68	[illegible]	[illegible]
ABSOLUTE JUDGMENT RESPONSE																					
	JG	595	6	612	37	499	6	595	12	587	18	574	9	499	6	575	6	595	6	[illegible]	[illegible]
	JG	595	12	612	46	587	18	[illegible]	[illegible]	587	8	587	20	587	20	595	12	612	9	583	78
	WW	612	18	612	57	574	35	612	9	612	4	514	5	514	2	612	9	612	18	583	78
	WW	612	18	612	46	587	30	612	9	587	18	574	15	514	5	612	18	612	28	575	98
	MC	612	18	612	57	499	3	496	7	516	4	492	18	492	3	612	18	612	28	577	18
	MC	612	57	575	61	499	6	516	8	587	18	499	13	492	9	612	18	612	28	575	98
	VC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	VC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12	[illegible]	31	[illegible]	8	[illegible]	13	[illegible]	9	[illegible]	22	[illegible]	[illegible]	[illegible]	[illegible]
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	612	18	612	37	551	10	612	18	612	18	499	13	499	13	612	18	612	28	575	98
	WW	612	18	612	37	551	10	612	18	612	9	499	20	499	13	612	18	612	28	575	98
	MC	612	57	575	54	551	10	516	17	612	18	492	18	455	18	612	37	612	37	575	61
	MC	496	30	575	54	551	10	516	17	612	9	492	18	455	18	575	12	496	30	575	61
	VC	496	30	612	37	587	8	516	24	612	18	492	27	492	9	496	22	496	30	wh	te
	VC	612	28	612	37	587	8	496	15	612	18	499	20	492	18	612	18	496	30	wh	te
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	612	28	612	37	551	10	612	18	612	18	499	13	551	10	612	18	496	30	575	61
	WW	496	22	612	37	499	66	496	22	496	15	492	18	492	18	612	28	612	57	575	98
	MC	496	22	496	22	496	25	516	17	516	17	492	18	492	9	496	22	496	30	575	61
	MC	496	30	575	54	551	10	516	24	516	24	492	18	455	26	612	37	612	57	575	48
	VC	496	22	575	54	551	5	587	35	612	9	499	20	492	18	612	18	496	22	575	18
	VC	496	15	575	54	621	4	496	15	612	18	492	18	492	18	496	28	496	22	wh	te

Table 5 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 5

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		537	40	575	61	496	47	612	37	492	36	455	33	566	31	499	27	587	68	White	
ABSOLUTE JUDGEMENT RESPONSE																					
	JG	587	8	514	2	551	10	587	8	557	5	551	10	551	5	595	6	514	2	551	86
	JG	587	8	Black		551	10	595	6	551	5	551	10	551	10	595	6	612	4	551	86
	WW	612	4	612	9	566	8	612	4	612	4	566	58	566	18	612	4	612	4	566	17
	WW	612	4	496	5	514	5	514	2	514	2	514	9	514	5	612	4	612	4	White	
	MC	612	9	566	17	499	6	587	8	587	18	499	3	499	6	566	8	566	17	575	18
	MC	612	18	612	9	499	6	496	7	587	8	551	10	551	5	496	5	566	8	572	32
	VC	496	4	612	4	492	3	496	5	612	2	499	3	492	9	587	17	496	15	White	
	VC	455	8	455	18	492	9	455	18	587	8	499	6	492	3	455	4	566	4	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	612	9	496	15	551	10	496	5	587	8	492	3	551	10	612	9	496	5	551	10
	WW	612	9	496	15	551	10	612	9	612	9	551	10	551	20	612	9	612	9	557	20
	MC	566	17	566	15	551	10	566	8	496	5	551	10	551	10	612	9	566	24	572	32
	MC	496	5	566	17	551	10	566	4	587	18	551	10	551	10	587	18	566	17	572	17
	VC	566	17	566	31	551	10	612	9	587	18	551	10	551	10	587	18	566	5	White	
	VC	566	8	566	31	492	9	587	8	612	4	499	6	566	8	587	18	496	5	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	587	8	566	17	551	10	496	4	587	8	551	10	551	10	612	4	612	9	551	10
	WW	496	5	566	17	455	8	496	4	575	11	551	10	551	10	566	8	496	5	575	11
	MC	566	34	575	18	551	10	566	24	496	5	551	10	551	10	566	31	566	31	551	31
	MC	492	3	566	17	551	10	566	17	566	17	551	10	551	10	566	31	566	31	572	47
	VC	587	35	566	31	587	18	612	9	496	5	551	20	499	3	612	9	566	17	White	
	VC	496	5	566	24	551	5	575	11	575	18	551	20	499	3	612	9	587	35	White	

Table 6 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 1 and Projection Pair 6

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		557	46	575	61	486	47	612	37	492	36	455	33	566	31	499	27	587	68	whi	te
ABSOLUTE JUDGEMENT RESPONSE																					
	JG	488	12	488	23	595	12	499	3	612	4	612	18	595	12	492	3	574	2	612	70
	JG	488	12	492	9	595	12	488	6	595	6	612	18	612	9	499	3	499	6	612	70
	WW	492	3	492	18	496	15	486	7	566	4	612	38	612	9	486	13	486	25	612	18
	WW	514	2	499	13	612	18	514	2	612	4	612	38	612	18	574	5	514	9	612	18
	MC	492	9	499	13	566	8	486	25	492	9	566	17	587	18	492	3	486	13	612	28
	MC	492	9	499	13	612	18	486	7	587	18	612	37	612	18	492	9	486	7	612	28
	VC	488	6	499	13	496	15	486	7	587	8	612	37	595	40	492	9	488	6	white	
	VC	492	9	499	13	496	15	499	6	587	18	612	37	612	28	492	3	574	9	whi	te
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	492	9	492	9	612	18	499	6	566	8	612	37	612	28	492	3	492	9	612	18
	WW	492	9	492	18	612	18	551	5	612	9	612	28	612	28	499	3	499	6	612	18
	MC	486	25	492	27	496	15	486	13	566	8	612	37	496	30	566	8	486	13	612	28
	MC	499	6	492	9	612	38	455	8	587	18	612	37	496	22	486	13	455	13	612	37
	VC	492	18	499	27	612	18	486	13	496	5	612	37	496	30	587	8	486	7	whi	te
	VC	492	9	499	27	612	18	486	7	587	18	612	37	612	28	587	8	499	6	whi	te
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	499	3	499	13	612	18	551	5	587	8	612	37	612	37	551	5	499	6	612	18
	WW	499	3	492	27	612	18	499	3	612	9	612	37	612	28	499	3	499	6	612	9
	MC	486	37	492	18	566	31	486	13	496	5	612	37	496	22	486	13	492	27	612	37
	MC	486	7	455	26	496	22	455	18	566	24	496	30	496	22	455	18	455	26	612	28
	VC	551	5	499	20	612	18	587	8	612	9	612	37	612	38	587	8	499	3	499	3
	VC	492	9	492	27	612	18	496	4	612	9	612	28	496	15	486	13	492	9	whi	te

Table 7 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 7

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	47	612	37	492	36	455	33	566	31	499	27	587	68	white	
ABSOLUTE JUDGEMENT RESPONSE	JG	455	4	455	33	575	6	455	4	566	4	587	18	566	8	486	7	486	7	566	76
	JG	486	13	455	33	575	6	481	7	455	4	587	4	587	-	455	8	[illegible]	7	486	74
	WW	486	13	455	26	587	1	486	7	455	4	575	11	575	18	455	18	486	13	455	8
	WW	486	25	486	37	587	18	486	13	455	8	575	30	575	11	486	25	486	37	455	18
	MC	486	7	486	37	575	30	566	4	566	8	575	30	575	30	486	7	486	13	575	11
	MC	486	13	486	37	575	30	566	4	566	5	575	48	575	30	486	7	486	13	486	37
	VC	486	25	587	[illegible]	587	18	566	4	612	4	583	10	587	18	566	30	486	45	white	
	VC	[illegible]	5	455	33	612	4	486	7	587	18	583	42	583	31	[illegible]	[illegible]	486	56	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	486	37	486	37	575	11	486	13	455	8	575	18	575	11	455	8	486	25	455	26
	WW	486	37	486	37	566	8	486	25	566	8	575	18	575	18	455	18	486	37	455	18
	MC	486	37	455	33	575	48	486	13	566	8	575	48	575	48	486	13	486	37	575	30
	MC	486	13	486	37	575	30	486	37	486	13	575	18	575	30	486	7	486	13	575	30
	VC	486	25	455	33	612	9	566	4	498	5	575	18	575	11	498	4	486	25	white	
	VC	486	37	455	33	587	18	486	7	566	8	575	30	575	18	566	8	486	33	white	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	486	13	486	37	566	8	486	7	455	4	575	30	575	30	486	13	486	35	455	18
	WW	486	37	486	37	566	8	486	13	566	17	575	30	575	30	455	18	455	18	455	18
	MC	486	37	455	33	575	30	486	25	486	25	575	48	575	30	486	25	486	37	566	17
	MC	455	33	455	33	575	48	486	7	455	18	575	61	575	48	486	37	486	37	455	26
	VC	486	25	455	33	612	18	566	8	566	17	575	30	575	18	566	8	575	18	white	
	VC	486	17	455	33	612	9	486	4	566	17	575	30	575	18	566	17	486	37	white	

Table 8 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 8

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	496	47	612	37	492	36	455	33	566	31	499	27	587	68	White	
ABSOLUTE JUDGEMENT RESPONSE																					
	JG	551	5	551	5	595	6	499	3	492	3	595	6	595	6	566	8	566	8	551	76
	JG	514	2	551	20	595	6	551	5	551	5	587	18	587	18	551	10	514	5	551	76
	WW	514	2	514	5	587	8	514	2	514	2	612	4	612	4	514	2	514	2	572	17
	WW	514	5	514	9	612	4	514	2	514	2	496	5	496	4	514	5	514	5	572	32
	MC	492	9	499	13	587	18	587	8	612	4	587	18	496	4	499	6	499	6	575	30
	MC	499	6	499	13	587	18	499	3	587	8	575	18	575	30	499	6	496	7	572	47
	VC	492	3	551	9	496	5	[illegible]	8	[illegible]	9	566	24	496	15	499	3	[illegible]	34	White	
	VC	551	10	492	18	587	18	587	18	587	8	566	17	566	8	499	6	492	3	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	496	13	551	31	566	17	551	5	566	8	566	24	566	17	499	8	496	13	575	18
	WW	551	10	551	31	496	5	551	5	572	11	566	17	566	17	551	10	551	10	572	32
	MC	499	6	499	20	566	8	492	9	551	5	496	5	496	5	492	9	496	13	572	32
	MC	551	10	499	13	612	9	499	6	499	3	496	5	587	18	499	6	496	13	572	32
	VC	492	9	551	43	612	4	587	8	587	18	496	15	496	15	492	3	492	9	White	
	VC	551	10	551	43	587	8	551	5	587	8	496	15	496	5	551	10	492	9	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	551	5	551	20	566	8	566	4	455	4	566	17	566	17	566	4	551	5	575	18
	WW	455	8	455	18	566	8	551	5	566	8	566	17	566	17	499	3	551	5	[illegible]	18
	MC	551	10	499	13	575	18	551	10	575	30	566	17	566	17	551	10	551	10	551	31
	MC	551	10	551	31	566	8	551	10	551	5	566	17	566	17	551	10	551	10	566	35
	VC	551	10	499	6	496	5	587	8	587	18	566	17	612	18	551	20	496	7	499	3
	VC	499	3	551	[illegible]	587	18	496	4	566	8	566	24	455	18	587	8	551	5	White	

Table 9 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 9

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	46	575	61	486	47	612	37	492	36	455	33	566	31	499	27	587	68	White	
ABSOLUTE JUDGEMENT RESPONSE																					
	JG	612	9	612	46	492	3	612	4	595	6	492	3	492	3	595	12	486	4	612	70
	JG	486	5	612	50	587	9	486	5	612	4	499	12	499	12	595	12	486	4	612	70
	WW	612	4	612	37	587	8	612	4	612	4	551	5	551	5	612	9	612	18	612	18
	WW	612	18	612	46	575	5	612	4	587	8	499	6	574	2	612	18	612	18	612	9
	MC	612	18	612	37	499	6	566	8	612	9	587	5	499	3	566	8	566	4	612	28
	MC	612	37	575	54	551	5	486	5	612	9	492	18	499	6	498	15	486	22	587	35
	VC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	9	[illegible]	[illegible]	[illegible]	12	[illegible]	12	[illegible]	12	[illegible]	[illegible]	[illegible]	2	White	
	VC	[illegible]	17	612	50	[illegible]	8	566	8	[illegible]	27	[illegible]	9	492	3	[illegible]	40	486	15	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	486	22	612	37	499	6	612	9	612	9	499	6	499	6	612	18	486	22	612	18
	WW	612	28	612	37	499	6	612	18	612	18	499	13	499	13	612	18	612	18	612	18
	MC	612	37	575	54	587	8	486	22	566	17	455	18	455	8	486	(30)	566	31	583	42
	MC	612	37	612	37	587	18	612	18	486	15	455	18	455	18	612	37	612	37	587	35
	VC	566	17	612	37	612	4	486	15	587	18	499	13	499	6	486	15	486	15	White	
	VC	486	22	612	37	587	18	486	15	612	18	499	6	557	10	486	15	486	30	Wh	40
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	486	15	612	37	499	3	612	18	612	18	499	6	499	6	612	18	612	28	612	18
	WW	486	22	612	37	492	3	486	15	486	5	492	9	492	9	612	18	612	28	612	9
	MC	486	30	486	30	486	13	566	17	486	5	492	18	492	9	486	22	492	30	492	22
	MC	612	27	575	54	455	18	612	27	612	18	455	18	455	18	612	37	612	37	595	54
	VC	486	22	575	54	612	4	486	15	486	5	492	27	499	3	612	18	486	15	White	
	VC	486	22	575	54	587	8	486	15	612	9	492	18	492	9	486	15	486	22	White	

Table 9 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair / and Projection Pair 9

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	46	575	61	486	47	612	37	492	36	455	33	564	31	499	27	587	68	White	
ABSOLUTE JUDGEMENT RESPONSE																					
	JG	612	9	612	46	498	3	612	4	575	6	498	3	492	3	575	12	498	4	612	70
	JG	496	5	612	50	587	8	496	5	612	4	498	12	498	12	575	12	496	4	612	70
	WW	612	4	612	37	587	8	612	4	612	4	551	5	551	5	612	9	612	18	612	18
	WW	612	18	612	46	574	5	612	4	587	8	498	6	574	2	612	18	612	18	612	9
	MC	612	18	612	37	499	6	564	8	612	9	551	5	499	3	564	8	564	4	612	28
	MC	612	37	575	54	551	5	496	5	612	9	492	18	499	6	498	15	496	22	587	35
	VC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	VC	[illegible]	17	612	50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	30	[illegible]	15	[illegible]	[illegible]
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	496	22	612	37	499	6	612	9	612	9	499	6	499	6	612	18	496	22	612	18
	WW	612	28	612	37	499	6	612	18	612	18	499	13	499	13	612	18	612	18	612	18
	MC	612	37	575	54	587	8	498	22	564	17	455	18	455	8	498	(30)	564	31	583	42
	MC	612	37	612	37	587	18	612	18	496	15	455	18	455	18	612	37	612	37	587	35
	VC	564	17	612	37	612	4	496	15	587	18	499	13	499	6	496	15	496	15	White	
	VC	496	22	612	37	587	18	496	15	612	18	499	6	557	10	496	15	496	30	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	496	15	612	37	499	13	612	18	612	18	499	6	499	6	612	18	612	28	612	18
	WW	496	22	612	37	492	3	496	15	496	5	492	9	492	9	612	18	612	28	612	9
	MC	496	30	496	50	496	13	564	17	496	5	492	18	492	9	496	22	496	30	496	22
	MC	612	37	575	54	455	18	612	23	612	18	455	18	455	18	612	37	612	37	595	54
	VC	496	22	575	54	612	4	496	15	496	5	492	27	499	3	612	18	496	15	White	
	VC	496	22	575	54	587	8	496	15	612	9	492	18	492	9	496	15	496	22	White	

Table 10 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 1

STIMULUS NUMBER

	Subj	λ¹	Pe	λ²	Pe	λ³	Pe	λ⁴	Pe	λ⁵	Pe	λ⁶	Pe	λ⁷	Pe	λ⁸	Pe	λ⁹	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	[illegible]	36	455	[illegible]	566	31	[illegible]	17	587	[illegible]	White	
ABSOLUTE JUDGEMENT RESPONSE	JG	486	7	575	30	455	18	572	32	455	4	455	18	566	4	486	7	572	17	455	70
	JG	486	7	572	70	455	8	566	35	455	4	455	26	566	4	455	4	551	10	455	70
	WW	486	7	575	48	486	25	575	30	486	13	486	13	486	7	486	13	575	48	486	13
	WW	486	7	575	48	486	37	575	30	486	7	455	18	486	7	486	7	575	30	455	18
	MC	575	30	575	61	486	25	575	48	486	13	455	18	499	3	486	7	575	48	486	25
	MC	486	7	575	61	486	37	575	49	486	13	455	18	551	5	486	7	575	48	486	37
	VC	575	30	575	48	455	18	551	20	486	7	455	8	587	35	595	6	566	17	white	
	VC	575	61	575	61	486	37	572	32	455	18	455	18	587	8	486	7	572	32	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	486	7	575	61	455	26	575	30	486	37	455	26	455	18	486	37	575	30	455	18
	WW	486	7	575	48	486	37	572	32	486	37	486	25	486	13	486	25	572	32	486	25
	MC	575	48	575	61	455	33	575	61	486	7	455	26	455	8	486	7	575	61	455	33
	MC	575	61	575	61	486	37	575	61	486	7	455	33	455	8	486	7	575	61	455	33
	VC	587	18	575	48	455	26	551	20	486	7	455	33	587	8	587	35	551	43	White	
	VC	583	10	575	61	566	8	551	20	486	7	455	26	612	4	496	4	551	43	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	587	8	575	61	455	18	575	48	455	18	455	26	455	8	486	7	575	48	455	18
	WW	493	3	575	61	455	26	575	48	486	25	455	18	455	8	486	7	575	48	White	
	MC	575	48	575	61	486	37	575	61	486	37	455	33	455	18	486	7	575	61	455	33
	MC	575	48	575	61	486	37	575	61	486	7	455	33	455	18	486	7	575	61	455	33
	VC	612	4	575	48	566	8	572	17	486	25	455	18	612	9	486	7	572	47	White	
	VC	575	48	575	61	486	25	572	17	486	13	455	18	566	8	486	7	587	53	white	

Table 11 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 2

		STIMULUS NUMBER																			
	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	496	37	612	37	492	36	455	33	566c	31	499	27	587	67	White	
ABSOLUTE JUDGEMENT RESPONSE																					
	JG	486	7	612	46	486	37	583	18	486	24	455	18	566c	4	486	7	612	37	498c	72
	JG	486	7	612	50	566c	8	612	37	486	7	566c	17	498c	15	486	7	612	28	498c	72
	WM	486	7	612	46	486	24	612	28	486	7	486	13	566c	4	486	7	612	37	498c	15
	WM	486	7	612	46	486	13	612	28	486	7	486	7	612	4	486	7	612	28	566c	40
	MC	612	9	575	46	492	18	597	35	492	18	455	18	583	10	486	7	612	18	612	28
	MC	612	18	575	54	486	7	612	18	486	7	498c	15	612	9	486	7	583	42	498c	22
	VC	498c	4	612	50	486	50	612	18	486	13	455	18	583	10	486	7	583	68	White	
	VC	566c	4	612	50	455	18	612	37	486	13	455	18	498c	5	486	7	612	46	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WM	612	4	612	37	486	37	612	37	486	37	455	26	566c	8	486	13	612	37	566c	31
	WM	612	4	612	37	486	37	612	37	486	37	486	24	566c	17	486	37	612	37	566c	31
	MC	498c	22	595	54	455	26	612	37	Black		455	33	566c	17	Black		575	61	566c	31
	MC	612	37	587	68	455	26	612	37	486	40	455	26	498c	15	Black		612	37	566c	31
	VC	583	10	612	37	486	37	587	68	486	24	455	26	612	9	486	7	587	68	White	
	VC	612	9	612	37	486	26	587	68	486	24	455	26	612	9	486	13	587	53	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WM	Black		612	37	455	26	612	37	486	24	455	26	566c	17	486	7	612	37	498c	22
	WM	486	7	612	37	455	18	612	37	486	24	455	18	455	8	486	7	612	37	498c	15
	MC	Black		595	54	455	33	612	37	Black		455	33	455	26	Black		612	37	566c	31
	MC	Black		595	54	486	37	583	78	486	37	455	33	455	26	Black		612	37	566c	31
	VC	587	18	595	54	486	37	587	68	486	13	566c	17	498c	15	Black		587	53	White	
	VC	583	10	595	54	486	26	587	68	486	13	455	18	566c	17	486	7	587	53	White	

Table 12 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 3

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	492	36	455	33	566	31	499	27	587	67	White	
ABSOLUTE JUDGEMENT RESPONSE																					
	JG	Black		575	30	455	26	572	32	486	7	455	8	566	4	Black		572	17	455	80
	JG	566	8	575	30	455	8	566	35	486	7	455	26	Black		486	7	551	20	455	80
	WW	Black		575	30	486	37	575	18	486	13	486	13	486	7	486	13	575	18	486	13
	WW	Black		575	48	486	25	575	30	486	13	486	25	Black		Black		575	48	455	18
	MC	575	11	575	61	486	25	575	36	486	7	455	26	499	3	486	7	575	30	486	25
	MC	Black		575	61	486	35	575	48	486	13	455	19	551	5	Black		575	48	486	37
	VC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	VC	577	31	[illegible]	[illegible]	[illegible]	[illegible]	572	22	[illegible]	13	455	26	512	[illegible]	[illegible]	9	551	31	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	Black		575	48	455	26	575	18	486	13	455	18	455	18	486	37	575	36	486	25
	WW	Black		575	48	486	37	572	32	486	37	486	25	486	25	486	25	572	32	486	25
	MC	575	48	575	61	486	37	575	61	486	37	455	33	566	8	Black		575	61	455	26
	MC	575	61	575	61	486	37	575	61	486	37	455	33	566	8	Black		575	61	455	33
	VC	587	8	575	48	486	25	575	18	486	13	455	26	566	4	486	13	575	30	white	
	VC	587	8	575	48	486	13	575	36	486	7	455	26	612	9	566	4	575	30	white	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	Black		575	49	486	13	575	48	486	13	455	18	455	8	486	7	575	48	455	18
	WW	551	5	575	30	486	25	575	48	486	25	455	18	455	8	486	7	575	[illegible]	455	8
	MC	Black		575	61	486	50	575	61	Black		455	33	566	17	Black		575	61	455	33
	MC	551	20	575	61	486	50	575	61	486	37	455	33	455	26	Black		575	61	455	26
	VC	587	8	575	48	486	25	499	21	486	13	455	18	566	8	566	4	578	21	white	
	VC	587	18	575	54	486	25	587	68	486	13	455	18	566	17	486	7	587	53	white	

Table 13 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 4

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	492	36	455	33	566	31	499	27	587	67	White	
ABSOLUTE JUDGMENT RESPONSE																					
	JG	Black		612	37	499	13	612	28	551	20	514	9	587	35	514	2	612	28	[illegible]	78
	JG	Black		612	46	551	26	612	28	551	16	551	31	572	17	514	2	612	18	583	85
	WW	612	4	612	46	514	9	612	37	514	9	514	9	587	18	514	5	612	37	575	48
	WW	612	4	612	50	514	5	612	37	514	2	514	5	575	48	514	2	612	46	575	48
	NC	612	18	612	37	551	20	612	28	499	13	551	5	612	4	486	7	612	46	575	48
	NC	612	9	595	54	551	10	612	37	499	6	551	20	587	35	486	7	612	46	575	61
	VC	[illegible]	5	612	[illegible]	[illegible]	[illegible]	[illegible]	75	[illegible]	9	499	5	[illegible]	[illegible]	[illegible]	7	[illegible]	30	575	77
	VC	[illegible]	2	612	[illegible]	[illegible]	23	[illegible]	30	[illegible]	9	499	6	612	4	[illegible]	2	[illegible]	37	575	30
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	612	4	612	37	551	20	498c	22	499	6	499	13	575	18	499	6	498c	30	575	48
	WW	612	4	612	37	551	31	612	37	551	20	499	13	575	18	499	6	612	46	575	48
	NC	486	7	595	54	499	20	498c	36	499	13	455	18	587	18	Black		612	37	575	61
	NC	Black		595	54	499	6	498c	30	486	13	455	18	587	18	486	25	498c	30	575	61
	VC	498c	4	612	37	499	13	612	28	499	6	499	13	587	8	492	3	498c	30	White	
	VC	587	18	612	37	499	13	498c	30	492	9	499	13	587	18	492	3	498c	30	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	498c	4	612	37	551	20	612	37	499	3	551	10	575	18	551	10	612	37	575	48
	WW	498c	4	612	37	551	20	498c	30	551	16	499	13	575	30	551	5	498c	30	595	48
	NC	Black		595	54	455	33	612	37	486	37	492	18	612	9	486	37	612	37	575	48
	NC	Black		595	54	499	20	612	37	492	18	551	10	612	9	Black		612	37	575	61
	VC	561c	8	595	54	492	18	612	37	499	6	499	6	561c	8	486	7	498c	30	575	18
	VC	587	18	595	54	499	13	612	37	492	9	499	6	566	4	486	13	595	27	White	

Table 14 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 5

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background λ	Background Pe
CHIP		551	40	575	61	[illegible]	37	612	37	492	36	455	33	56k	31	499	27	587	67	White	
ABSOLUTE JUDGMENT RESPONSE	JG	Black		587	8	551	20	587	8	514	15	551	5	499	3	514	2	455	4	537	60
	JG	Black		612	60	551	10	612	60	574	2	551	10	551	16	574	2	612	4	551	60
	WW	Black		56k	8	551	20	56k	8	514	5	551	10	514	2	Black		56k	17	557	20
	WW	Black		56k	17	514	9	56k	8	514	5	514	9	514	5	574	2	56k	17	574	5
	MC	575	11	612	9	499	6	498c	5	499	13	551	10	551	5	486	7	56k	8	551	20
	MC	Black		612	9	499	6	56k	8	499	6	551	10	587	8	Black		56k	17	551	20
	VC	~~[illegible]~~	~~3~~	~~56k~~	~~17~~	~~499~~	~~6~~	~~56k~~	~~8~~	~~492~~	~~3~~	~~499~~	~~6~~	~~572~~	~~8~~	~~595~~	~~6~~	~~56k~~	~~24~~	~~white~~	
	VC	~~[illegible]~~	~~7~~	~~56k~~	~~17~~	~~499~~	~~6~~	~~56k~~	~~8~~	~~492~~	~~3~~	~~499~~	~~13~~	~~612~~	~~8~~	~~455~~	~~9~~	~~56k~~	~~24~~	~~white~~	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	Black		56k	17	551	20	56k	17	557	10	557	10	572	17	499	6	56k	17	572	11
	WW	Black		56k	24	551	20	56k	17	551	10	551	10	551	5	551	5	56k	17	557	20
	MC	Black		56k	17	499	6	56k	12	492	3	455	8	455	8	486	17	56k	17	572	32
	MC	Black		498c	15	499	6	56k	17	486	7	551	16	455	4	Black		486	37	572	32
	VC	583	10	56k	31	551	10	612	9	492	9	551	10	551	20	587	8	498c	15	White	
	VC	583	16	56k	17	551	10	612	9	551	10	551	10	551	5	587	8	498c	15	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	587	8	56k	17	551	10	56k	17	551	5	551	5	575	11	498c	4	498c	15	585	18
	WW	486	7	56k	17	551	10	56k	17	499	6	499	6	572	17	551	5	498c	15	56k	17
	MC	Black		56k	24	492	9	56k	24	492	3	551	10	551	16	Black		56k	31	575	18
	MC	Black		56k	17	499	6	56k	24	551	5	551	20	551	10	Black		56k	31	557	20
	VC	587	8	56k	17	551	4	498c	15	551	5	557	5	587	8	498c	4	56k	17	White	
	VC	587	8	492c	12	499	13	498c	15	551	5	black		499	6	486	7	595	27	White	

Table [illegible] Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 6

STIMULUS NUMBER

Group	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	495	37	612	37	492	36	455	33	56c	31	499	27	587	67	White	
		5		-	-					-				-							
ABSOLUTE JUDGMENT RESPONSE	JG	Black		455	4	612	18	455	4	612	4	612	9	498c	4	498c	4	499	3	612	70
	JG	Black		Black		612	28	Black		612	9	612	18	612	18	612	4	499	3	612	70
	WW	514	2	514	5	612	28	514	5	612	9	595	27	587	8	612	4	514	15	612	9
	WW	Black		514	5	612	28	514	5	612	18	612	28	612	9	612	4	514	15	612	18
	MC	612	18	492	3	612	37	492	9	612	18	612	18	587	18	612	18	499	20	612	28
	MC	612	18	499	13	612	37	499	6	612	46	612	28	577	18	612	9	492	18	612	28
	VC	486	7	499	24	492	28	492	3	496c	15	582	18	587	8	56c	8	492	36	White	
	VC	496	7	492	18	612	28	492	27	496c	5	612	15	612	8	496	4	499	20	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	492	3	492	18	612	18	492	18	612	18	613	18	612	9	612	4	492	18	612	18
	WW	612	4	499	13	612	28	499	6	612	28	612	28	612	18	612	18	499	20	612	18
	MC	Black		488	23	496c	30	455	18	56c	31	496c	22	56k	17	[illegible]		575	61	612	37
	MC	Black		492	18	496c	30	455	18	496c	30	496c	30	496c	22	Black		486	37	612	37
	VC	486	7	499	27	496c	22	499	6	496c	15	612	28	612	9	496c	15	492	27	White	
	VC	486	2	499	27	496c	22	492	18	496c	15	612	37	612	9	56k	8	499	13	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	486	7	499	6	612	37	499	6	496c	15	612	28	496c	15	496c	15	499	13	612	18
	WW	Black		499	27	612	28	499	13	496c	15	612	18	612	9	496c	15	492	27	612	18
	MC	Black		455	33	612	37	486	25	496c	30	612	37	56c	17	Black		486	37	595	54
	MC	Black		455	33	612	37	455	26	612	37	612	37	56k	31	575	48	486	37	612	37
	VC	587	8	492	27	612	4	499	6	496c	22	612	18	56k	8	496c	15	499	13	White	
	VC	496	7	492	36	612	28	492	18	496c	15	612	18	612	9	496c	5	499	20	White	

Table 16 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 7

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Background λ	Background Pe
CHIP		551	40	575	61	[illegible]	37	612	37	[illegible]	36	455	33	56/c	31	[illegible]	27	587	67	white	
		-																			-
ABSOLUTE JUDGMENT RESPONSE	JG	486	7	486	50	587	8	486	7	587	8	587	8	455	4	486	7	486	25	455	50
	JG	486	7	486	50	587	8	486	25	587	8	587	18	Black		486	7	56/c	43	56/c	60
	WW	486	7	455	26	575	18	486	37	575	18	575	11	455	4	Black		486	37	455	8
	WW	Black		455	33	575	30	486	25	575	30	575	11	486	7	575	11	486	25	455	4
	MC	Black		486	37	575	30	486	37	575	18	575	30	455	4	575	11	486	25	486	37
	MC	486	7	486	37	575	30	486	37	575	48	575	30	492	3	575	11	486	37	56/c	17
	VC	486	18	486	[illegible]	587	18	455	18	587	35	587	8	56/c	8	587	8	486	[illegible]	white	
	VC	Black		455	33	587	35	455	18	587	53	587	8	[illegible]	8	587	18	486	37	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	486	7	486	37	575	18	486	37	575	18	575	18	486	7	575	11	486	37	455	18
	WW	486	13	486	37	575	18	486	32	572	17	575	18	455	8	575	11	486	37	486	25
	MC	575	48	486	37	575	61	486	37	575	61	575	30	56/c	8	575	61	486	37	575	18
	MC	575	61	486	37	575	61	486	37	575	61	575	30	56/c	8	575	61	486	37	575	30
	VC	486	7	455	33	587	21	455	26	587	35	575	18	612	4	583	21	486	37	white	
	VC	486	7	455	33	587	21	455	26	583	18	575	11	612	4	587	8	486	37	white	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	486	7	455	33	575	30	455	33	575	18	575	18	575	11	551	5	455	33	455	18
	WW	486	7	455	33	572	17	455	33	572	11	575	18	56/c	8	572	11	455	33	455	8
	MC	575	30	486	37	575	48	486	37	575	48	575	30	56/c	17	575	48	486	37	56/c	31
	MC	575	30	455	33	575	61	455	33	575	61	575	30	455	8	575	48	486	50	455	26
	VC	Black		455	33	587	42	455	26	587	53	575	18	56/c	17	587	18	486	50	white	
	VC	486	7	455	33	587	18	486	37	587	18	575	18	56/c	17	587	35	486	37	white	

Table 17 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 8

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	496	37	612	37	492	36	465	33	566	31	499	27	587	67	White	
ABSOLUTE JUDGMENT RESPONSE	JG	Black		514	35	587	8	566	17	557	8	[illegible]	2	575	11	[illegible]	4	551	10	551	75
	JG	514	2	551	31	[illegible]	[illegible]	551	10	[illegible]	6	595	6	551	10	595	6	566	17	551	75
	WW	Black		551	20	612	9	551	10	612	4	612	4	514	2	[illegible]	[illegible]	[illegible]	15	551	10
	WW	Black		514	9	612	9	514	2	612	4	612	4	575	11	612	4	514	2	566	17
	NC	551	5	551	10	612	18	499	6	612	18	612	4	551	5	486	7	[illegible]	13	575	32
	NC	Black		499	13	612	18	499	6	492	5	[illegible]	[illegible]	551	5	[illegible]	7	[illegible]	13	575	30
	~~VC~~	~~587~~	~~18~~	[illegible]	[illegible]	[illegible]	[illegible]	~~492~~	~~9~~	~~566~~	17	498	5	575	11	[illegible]	5	492	18	white	
	~~VC~~	~~Black~~		~~514~~	~~15~~	[illegible]	[illegible]	~~492~~	~~9~~	498	[illegible]	[illegible]	4	[illegible]	4	[illegible]	4	492	18	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	Black		551	43	566	17	551	20	[illegible]	8	566	4	575	11	566	5	551	20	575	11
	WW	Black		551	43	566	5	551	31	566	17	[illegible]	5	575	16	566	8	[illegible]	20	[illegible]	32
	NC	486	7	499	13	[illegible]	[illegible]	495	9	566	8	498	5	[illegible]	9	Black		[illegible]	[illegible]	575	[illegible]
	NC	Black		492	18	496	5	495	9	566	17	612	9	496	5	Black		499	13	575	32
	VC	486	7	551	31	492	9	496	30	492	18	492	18	587	18	[illegible]	3	496	30	White	
	VC	486	7	551	10	612	9	551	10	587	35	612	9	566	4	587	18	[illegible]	6	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	486	7	551	20	566	17	551	10	612	9	566	17	575	16	566	8	551	10	551	5
	WW	551	5	551	20	566	8	551	20	566	17	566	8	[illegible]	[illegible]	612	4	551	20	[illegible]	17
	NC	Black		492	27	566	17	[illegible]	25	[illegible]	[illegible]	[illegible]	[illegible]	455	4	575	11	[illegible]	[illegible]	575	47
	NC	551	5	595	54	566	7	495	15	566	17	566	17	551	10	551	5	499	13	[illegible]	47
	VC	587	8	551	20	612	9	551	10	587	35	[illegible]	18	[illegible]	9	587	18	[illegible]	6	White	
	VC	Black		551	31	498	5	492	9	612	9	[illegible]	4	[illegible]	18	[illegible]	4	[illegible]	6	[illegible]	

Table 18 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 2 and Projection Pair 9

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	492	36	455	33	566c	31	499	27	587	67	White	
ABSOLUTE JUDGEMENT RESPONSE	JG	486	7	612	46	[illegible]	3	612	9	551	5	455	4	612	4	[illegible]	2	612	9	612	60
	JG	612	4	612	50	[illegible]	[illegible]	612	28	[illegible]	[illegible]	455	[illegible]	[illegible]	6	486	7	612	18	595	70
	WW	Black		612	37	514	9	612	28	514	9	[illegible]	5	[illegible]	4	514	5	612	28	612	9
	WW	612	4	612	56	514	4	612	28	514	5	514	5	612	4	514	5	612	28	612	18
	MC	612	18	595	54	499	6	612	28	492	[illegible]	499	3	612	[illegible]	Black		595	54	595	40
	MC	612	15	612	37	499	6	612	37	492	9	[illegible]	5	612	9	Black		612	46	612	25
	VC	566c	8	612	60	499	13	595	54	492	12	499	3	587	8	[illegible]	12	499	15	white	
	VC	Black		612	50	492	18	498c	22	492	3	[illegible]	[illegible]	612	4	486	7	[illegible]	[illegible]	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	Black		612	37	492	9	498c	22	492	9	492	9	575	11	499	3	498c	30	[illegible]	[illegible]
	WW	Black		612	60	499	13	612	28	499	6	499	6	575	11	[illegible]	[illegible]	[illegible]	46	612	15
	MC	Black		595	54	455	18	498c	30	455	8	455	8	612	9	Black		498c	30	583	62
	MC	Black		595	54	[illegible]	2	612	[illegible]	486	13	566c	8	612	18	Black		498c	30	[illegible]	42
	VC	498c	4	612	37	492	9	498c	30	486	[illegible]	492	18	[illegible]	18	499	3	498c	30	White	
	VC	587	8	612	37	499	6	[illegible]	5	492	9	551	10	612	4	492	2	[illegible]	22	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	486	7	612	37	499	6	612	37	499	6	499	6	575	11	455	4	612	37	575	11
	WW	Black		612	37	551	10	612	37	499	6	499	6	575	15	551	5	[illegible]	37	612	18
	MC	Black		595	54	486	25	612	37	486	25	486	25	566c	17	Black		612	37	595	54
	MC	612	18	595	54	498c	22	612	37	455	26	455	18	612	9	486	25	612	37	595	40
	VC	587	8	595	54	499	6	498c	30	492	3	551	10	612	4	498c	4	498c	30	White	
	VC	Black		612	37	492	3	498c	22	499	3	551	10	587	18	486	7	[illegible]	28	White	

Table 19 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 1

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	492	36	455	33	516c	31	499	27	587	67	White	
ABSOLUTE JUDGEMENT RESPONSE	JG	516c	4	455	60	455	4	583	21	455	4	516c	4	583	10	455	4	583	10	455	70
	JG	455	8	455	60	455	8	587	8	486	7	516c	4	587	8	455	4	575	11	455	70
	WW	486	13	486	7	486	7	575	18	486	13	575	11	575	11	486	25	575	18	486	7
	WW	486	25	486	7	486	25	575	18	486	37	575	11	575	18	486	25	575	30	486	25
	MC	486	7	612	18	514	2	575	61	486	7	575	18	575	30	486	7	575	48	White	
	MC	486	13	575	11	486	13	575	61	486	7	575	30	575	30	486	13	575	30	455	18
	~~VC~~	~~486~~	~~5~~	~~612~~	~~8~~	~~516c~~	~~8~~	~~575~~	~~10~~	~~486~~	25	587	18	587	8	486	37	583	10	White	
	~~VC~~	~~486~~	~~5~~	~~575~~	~~18~~	~~486~~	~~15~~	~~583~~	~~42~~	486	25	587	18	587	8	486	73	583	10	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	486	25	575	18	486	13	575	30	486	37	455	4	575	18	486	37	575	18	455	18
	WW	455	18	White		486	25	572	17	486	25	455	4	575	18	455	18	575	18	455	8
	MC	486	37	575	11	486	37	575	61	486	45	612	4	575	30	486	37	575	30	455	30
	MC	486	37	455	26	486	45	575	61	486	45	575	30	575	48	486	45	575	48	455	30
	VC	516c	17	516c	24	486	7	575	18	486	25	587	18	612	9	486	25	612	9	White	
	VC	486	7	575	11	486	13	583	62	486	25	612	9	612	18	612	28	587	18	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	486	25	455	4	486	25	575	18	486	25	455	4	575	18	486	25	575	18	486	25
	WW	486	37	White		486	25	575	15	486	45	455	8	575	11	486	37	575	18	486	13
	MC	486	45	486	45	486	45	575	61	486	45	455	8	575	48	486	45	575	48	455	33
	MC	575	60	455	33	575	60	575	61	455	33	455	8	455	33	455	33	575	61	455	8
	VC	486	13	575	11	486	7	575	18	486	25	583	10	612	4	486	25	583	21	White	
	VC	455	8	575	11	486	37	575	30	486	25	612	9	575	11	486	25	575	18	White	

Table 20 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 2

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	482	36	455	33	561c	31	499	27	587	67	White	
ABSOLUTE JUDGEMENT RESPONSE	JG	486	13	498c	42	486	13	612	37	486	25	498c	5	498c	5	486	13	498c	5	498c	50
	JG	486	25	498c	42	486	13	612	46	486	13	498c	5	498c	15	486	25	498c	15	498c	50
	WW	486	7	561c	17	486	7	612	46	486	13	612	4	612	28	486	37	612	18	561c	24
	WW	486	13	498c	15	486	7	612	46	486	37	612	9	612	28	486	13	612	28	498c	25
	MC	486	7	612	18	551	26	612	25	499	13	551	20	587	18	499	27	575	18	612	25
	MC	486	7	498c	15	486	7	595	54	486	7	575	36	612	18	499	20	587	35	498c	15
	VC	561c	17	612	7	561c	17	612	57	486	7	498c	22	498c	22	486	12	612	28	white	
	VC	561c	8	612	60	455	8	612	56	486	12	612	18	498c	22	486	25	612	28	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	486	25	498c	15	486	25	612	37	486	37	561c	17	498c	22	486	37	498c	31	498c	15
	WW	486	25	498c	15	486	13	498c	30	486	37	561c	24	498c	22	486	37	498c	22	498c	15
	MC	486	25	561c	31	486	25	498c	30	455	33	612	9	498c	22	486	45	498c	22	498c	30
	MC	486	25	561c	31	486	25	612	37	455	26	498c	22	612	37	486	25	612	37	455	26
	VC	486	25	561c	8	Black		612	37	486	37	561c	17	498c	15	486	37	612	28	white	
	VC	486	13	612	37	486	7	612	37	486	25	561c	24	498c	22	486	37	612	28	white	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	486	37	561c	17	486	37	498c	30	486	45	498c	15	498c	22	486	45	498c	30	561c	17
	WW	486	45	561c	17	486	37	612	37	486	45	561c	17	498c	22	486	45	612	28	561c	17
	MC	486	25	595	46	486	45	612	37	486	37	561c	17	612	28	486	45	612	37	498c	22
	MC	612	37	498c	30	498c	30	455	33	498c	30	561c	24	455	33	498c	30	455	33	612	57
	VC	486	25	612	37	486	13	612	37	486	37	498c	15	612	28	498c	37	612	37	white	
	VC	486	7	498c	30	486	13	612	37	486	25	498c	22	498c	25	486	37	612	25	white	

Table 2/Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 3

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	492	36	455	33	Sblk	31	499	27	587	67	White	
ABSOLUTE JUDGEMENT RESPONSE	JG	455	4	455	56	455	8	583	21	Black		Sblk	8	595	12	Black		595	12	455	57
	JG	455	4	Sblk	60	488	6	583	21	486	13	587	8	583	10	Black		583	10	455	50
	WM	486	37	612	4	486	25	575	11	486	37	575	11	575	18	486	50	595	30	486	15
	WM	486	25	455	4	486	7	575	30	486	25	575	11	575	18	486	25	575	30	486	25
	MC	486	7	575	11	486	7	575	48	486	13	575	18	575	30	486	13	575	48	White	
	MC	486	13	575	11	486	7	575	48	486	7	575	18	475	30	486	13	575	48	455	15
	VC	499	6	575	17	492	3	612	32	499	6	587	18	587	8	486	13	587	18	White	
	VC	486	25	Sblk	60	455	8	587	35	486	37	612	4	587	8	486	13	587	18	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WM	486	25	White		486	13	575	30	486	37	Sblk	8	575	11	486	37	575	18	White	
	WM	486	25	White		486	25	575	30	486	25	455	8	575	11	486	25	575	18	455	4
	MC	486	50	575	18	486	37	575	61	455	33	587	18	575	48	486	50	575	48	455	33
	MC	455	33	455	26	486	50	575	61	455	33	575	30	575	48	486	50	575	48	455	33
	VC	455	8	575	18	455	4	575	18	486	25	575	18	587	35	486	25	587	53	White	
	VC	486	7	575	11	486	13	587	18	486	25	486	5	612	18	486	37	587	35	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WM	486	25	455	8	455	17	575	18	486	37	Sblk	8	Sblk	8	486	37	575	18	455	24
	WM	486	37	White		486	37	575	18	486	50	Sblk	8	575	18	486	50	575	18	486	25
	MC	486	37	575	18	486	50	575	61	455	33	486	5	575	48	455	33	575	48	455	24
	MC	575	61	455	33	575	61	455	33	575	61	486	7	455	33	575	61	455	33	575	30
	VC	486	13	575	11	486	7	587	35	486	25	587	18	612	9	486	37	587	35	White	
	VC	486	13	575	11	486	7	575	18	486	25	612	9	587	18	486	25	587	18	White	

Table 22 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 4

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	496	37	612	37	492	36	455	33	516c	31	499	27	587	67	White	
ABSOLUTE JUDGMENT RESPONSE																					
	JG	551	10	575	18	551	16	612	28	516	17	587	18	595	12	551	20	587	18	575	11
	JG	551	16	583	85	551	16	595	46	551	26	587	8	595	6	551	20	595	12	583	90
	WW	551	20	575	18	551	20	612	28	551	20	575	18	612	28	514	9	612	28	595	30
	WW	551	26	575	18	551	20	612	28	551	20	612	4	612	18	614	9	612	28	575	48
	MC	575	10	White		575	26	455	18	575	20	575	11	455	4	575	30	455	18	White	
	MC	499	6	575	30	499	3	612	18	499	18	587	18	612	9	492	18	612	18	575	98
	VC	492	73	575	30	492	3	612	22	499	13	587	18	498c	15	492	3	498c	30	white	
	VC	492	9	587	75	492	5	612	37	499	13	587	18	612	18	492	18	516c	17	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	551	20	575	30	551	10	612	28	551	10	587	8	587	35	499	6	612	28	575	48
	WW	499	6	575	18	551	10	612	28	551	20	612	18	498c	22	499	6	498	22	575	48
	MC	492	18	575	18	492	18	498c	30	492	18	498c	15	516c	24	492	27	516c	24	575	48
	MC	551	10	575	30	551	26	612	37	551	20	516c	24	455	26	551	20	498c	22	575	48
	VC	551	20	575	11	551	10	612	28	499	6	587	18	612	18	499	6	612	28	White	
	VC	492	9	575	18	551	5	612	37	499	6	587	18	498c	5	499	13	612	28	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	551	26	575	30	551	20	612	37	499	13	612	9	612	28	499	13	612	28	575	30
	WW	551	20	575	30	551	26	612	37	551	31	612	18	612	28	551	31	612	28	575	30
	MC	551	31	575	61	551	31	612	37	551	31	498c	5	612	28	492	27	612	37	575	61
	MC	551	31	575	48	551	31	612	37	551	31	516c	17	498c	22	499	13	498c	22	572	47
	VC	492	9	575	18	551	10	612	37	499	6	587	18	612	18	499	13	612	28	White	
	VC	551	31	575	18	551	10	612	37	499	13	612	9	498c	22	499	13	612	28	White	

Table 23 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 5

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	496	37	612	37	492	36	455	33	566c	31	499	27	587	67	White	
ABSOLUTE JUDGEMENT RESPONSE	JG	572	11	514	46	572	11	612	4	551	5	514	5	551	5	551	10	Black		514	48
	JG	551	5	514	48	499	5	595	6	551	5	551	5	595	6	551	5	595	6	551	80
	WM	514	5	White		514	5	566c	8	514	5	514	5	566c	4	514	5	566c	8	551	20
	WM	514	5	514	5	514	5	566c	8	514	9	612	4	566c	4	514	5	566c	8	514	9
	MC	551	5	575	18	499	5	498c	5	492	9	587	8	498c	4	492	9	492	9	White	
	MC	587	8	575	18	499	5	498c	5	499	6	498c	5	498c	4	492	3	612	4	551	20
	VC	551	5	575	11	587	8	566c	21	551	10	498c	15	498c	5	551	20	498c	15	White	
	VC	551	5	587	18	587	18	566c	24	551	10	498c	15	566c	8	551	20	566c	17	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WM	551	5	White		551	10	566c	17	551	5	587	8	612	4	551	5	612	4	White	
	WM	551	10	575	11	551	5	566c	17	551	10	587	8	587	8	551	5	566c	8	566	8
	MC	492	9	575	11	492	9	566c	17	499	6	566c	8	566c	17	499	6	566c	24	551	48
	MC	551	20	572	32	551	20	566c	17	551	20	566	17	566c	24	498c	25	566c	24	566	35
	VC	492	3	575	11	499	3	566c	8	551	10	587	8	612	9	551	10	498c	5	White	
	VC	551	10	575	11	499	3	566c	17	499	3	587	8	566c	8	551	10	566c	17	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WM	551	20	575	11	551	10	566c	8	551	10	612	4	612	4	551	10	612	9	White	
	WM	551	20	White		551	20	566c	8	551	20	566c	8	566c	8	551	10	566c	8	551	10
	MC	551	20	551	31	551	20	612	9	551	20	551	10	498c	5	551	10	498c	5	551	31
	MC	551	20	572	17	551	20	566c	17	551	20	498c	5	566c	8	499	6	566c	8	572	47
	VC	551	10	575	11	492	9	566c	8	499	5	587	8	587	18	551	10	612	9	White	
	VC	551	10	575	11	551	10	566c	8	499	6	612	4	498c	5	551	5	498c	5	White	

Table 24 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 6

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	496c	37	612	37	492	36	455	33	56c	31	499	27	587	67	White	
ABSOLUTE JUDGMENT RESPONSE	JG	612	9	612	60	612	9	Black		612	9	612	4	Black		612	9	Black		612	70
	JG	612	18	612	60	612	4	Black		612	9	612	4	Black		612	9	Black		612	70
	WW	612	28	612	9	612	28	574	5	612	18	612	4	574	5	612	18	574	5	612	28
	WW	612	18	612	4	612	18	499	6	612	28	612	9	574	5	612	18	499	6	612	28
	MC	612	9	612	9	612	9	492	3	612	9	587	8	587	8	612	37	612	4	612	28
	MC	612	37	612	28	612	9	492	9	612	18	612	9	587	8	612	37	455	4	612	37
	~~VC~~	~~612~~	~~20~~	~~575~~	~~11~~	~~612~~	~~50~~	~~492~~	~~3~~	~~612~~	~~50~~	~~587~~	~~18~~	~~488~~	~~5~~	[illegible]	[illegible]	~~492~~	~~9~~	~~White~~	
	~~VC~~	~~496c~~	~~5~~	~~492~~	~~50~~	~~496c~~	~~4~~	~~492~~	~~3~~	~~612~~	~~18~~	~~587~~	~~18~~	~~492~~	~~9~~	~~612~~	~~18~~	~~492~~	~~9~~	~~White~~	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	496c	30	575	11	496c	30	492	9	612	28	56c	4	492	9	496c	22	492	9	587	35
	WW	612	37	575	11	612	9	499	13	496c	22	492	3	499	6	612	37	499	6	612	18
	MC	496c	30	612	28	612	37	492	18	496c	30	486	25	486	37	496c	22	486	37	496c	30
	MC	496c	22	612	37	496c	22	455	18	496c	30	455	18	455	24	612	37	455	18	612	37
	VC	496c	22	575	11	496c	15	492	18	612	18	612	4	499	3	612	28	499	6	White	
	VC	496c	15	575	11	612	18	492	18	496c	22	587	8	587	18	612	28	499	6	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	612	28	White		612	28	499	13	612	28	499	3	499	6	612	37	499	13	612	28
	WW	496c	22	White		496c	22	499	6	612	28	612	4	499	6	612	37	499	13	496c	22
	MC	612	28	612	37	612	28	492	9	612	28	56c	17	455	8	496c	30	455	8	612	37
	MC	496c	30	612	37	496c	30	455	18	496c	30	56c	8	455	18	496c	30	455	8	612	37
	VC	496c	15	575	11	496c	22	499	6	496c	22	612	9	612	4	496c	30	492	9	White	
	VC	496c	22	575	11	612	18	499	6	496c	22	587	18	499	6	496c	22	551	5	White	

Table 26 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 7

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	492	36	455	33	56k	31	499	27	587	67	White	
ABSOLUTE JUDGMENT RESPONSE																					
	JG	566	17	56k	40	566	17	455	8	551	10	56k	4	455	8	551	10	455	8	56k	46
	JG	551	5	455	40	551	5	486	13	551	10	455	4	455	8	551	10	455	8	455	50
	WW	557	10	56k	8	551	10	455	26	566	35	455	8	455	18	575	30	455	26	455	18
	WW	566	8	455	8	566	8	455	26	566	35	455	18	455	26	566	17	455	26	455	4
	NC	575	11	White		575	30	455	18	575	30	486	7	455	8	575	30	455	8	White	
	NC	587	18	486	25	575	18	486	25	575	18	486	19	486	25	575	30	486	25	575	11
	VC	566	17	486	15	566	8	455	33	566	33	587	8	56k	24	566	[illegible]	56k	17	White	
	VC	551	19	56k	15	551	20	455	33	566	35	56k	8	486	15	566	17	486	15	White	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	572	17	455	4	572	17	455	26	572	32	56k	8	56k	17	572	32	56k	17	White	
	WW	566	35	56k	4	572	17	56k	24	572	32	56k	8	455	8	572	32	56k	17	White	
	NC	575	48	455	26	575	48	486	46	575	48	56k	17	455	26	575	48	455	33	56k	24
	NC	575	61	56k	24	575	61	486	95	575	61	56k	24	56k	31	575	61	455	33	575	18
	VC	572	17	56k	31	572	11	455	26	572	32	56k	8	56k	17	572	47	455	18	White	
	VC	572	17	455	8	572	17	455	26	572	32	56k	8	56k	17	572	47	455	18	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	572	17	White		572	17	455	26	572	32	455	8	455	18	572	32	455	26	White	
	WW	572	32	486	7	572	32	455	33	572	32	455	18	455	26	572	32	455	26	White	
	NC	572	32	455	18	572	32	455	33	572	32	56k	8	455	18	572	32	455	18	575	18
	NC	575	61	455	26	575	61	455	33	575	61	486	4	455	26	575	61	455	33	575	18
	VC	587	8	575	11	587	8	455	26	551	20	486	4	56k	24	551	20	56k	17	White	
	VC	551	20	575	11	551	5	455	26	551	10	486	4	56k	8	551	5	56k	8	White	

Table 26 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair V

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	496	37	612	37	492	36	455	33	Slk	31	499	27	587	67	White	
ABSOLUTE JUDGMENT RESPONSE																					
	JG	612	4	514	50	612	4	566	17	612	4	Black		551	5	612	4	551	5	514	50
	JG	595	6	575	11	595	6	551	10	595	6	499	3	551	5	595	6	551	5	575	11
	WW	612	4	514	5	612	4	514	9	612	9	514	5	514	9	612	4	514	9	514	5
	WW	612	4	514	5	612	4	551	10	612	9	514	5	514	9	496	4	551	5	575	18
	MC	612	9	575	11	496	4	499	6	Slk	4	496	3	612	18	492	9	455	18	White	
	MC	587	18	575	30	587	8	499	6	Slk	4	499	3	499	6	Slk	8	499	6	575	48
	~~VC~~	~~496~~	~~5~~	~~575~~	~~11~~	~~587~~	~~8~~	~~499~~	~~13~~	~~Slk~~	~~12~~	~~587~~	~~18~~	~~551~~	~~5~~	~~496~~	~~15~~	~~492~~	~~6~~	~~White~~	
	~~VC~~	~~Slk~~	~~8~~	~~575~~	~~18~~	~~587~~	~~18~~	~~551~~	~~10~~	~~496~~	~~15~~	~~587~~	~~8~~	~~492~~	~~3~~	~~496~~	~~15~~	~~499~~	~~3~~	~~White~~	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	587	8	575	11	612	4	551	20	612	9	587	8	551	5	612	9	551	10	White	
	WW	496	4	587	8	587	18	455	8	612	9	587	18	551	20	496	15	551	10	575	11
	MC	575	18	575	18	575	18	551	10	612	9	612	4	551	10	Slk	17	551	10	575	30
	MC	575	48	575	30	575	48	551	10	Slk	24	Slk	17	551	10	Slk	24	551	10	575	48
	VC	587	18	575	11	587	35	551	16	612	18	496	5	499	6	Slk	17	455	8	White	
	VC	587	18	575	11	587	8	551	10	612	9	612	4	499	3	496	5	551	20	White	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	612	9	575	11	612	9	551	20	496	5	496	4	551	20	496	5	551	10	White	
	WW	612	9	575	11	612	9	551	20	587	18	587	8	551	10	612	9	551	20	575	11
	MC	Slk	8	572	17	Slk	8	551	10	496	5	492	18	551	10	496	5	551	10	572	17
	MC	Slk	8	572	32	Slk	8	499	6	Slk	8	Slk	4	551	10	Slk	8	551	10	575	30
	VC	612	4	575	11	612	9	551	20	496	15	612	4	551	10	612	9	551	10	White	
	VC	612	9	575	11	587	18	551	10	612	9	587	8	551	20	496	4	551	20	White	

Table 27 Wavelength (λ) and Excitation Purity (Pe) of Chips and Responses for Broad Band Slide Pair 3 and Projection Pair 9

STIMULUS NUMBER

	Subj	λ^1	Pe	λ^2	Pe	λ^3	Pe	λ^4	Pe	λ^5	Pe	λ^6	Pe	λ^7	Pe	λ^8	Pe	λ^9	Pe	Backgrnd λ	Backgrnd Pe
CHIP		551	40	575	61	486	37	612	37	492	36	455	33	56k	31	499	27	587	67	White	
ABSOLUTE JUDGMENT RESPONSE	JG	492	5	583	10	551	10	612	9	492	3	587	8	595	6	551	10	595	12	583	62
	JG	56k	4	612	60	492	5	612	18	551	10	587	8	498c	5	551	10	612	9	612	70
	WW	514	5	612	9	514	5	612	28	514	9	612	4	612	18	514	9	612	28	612	18
	WW	514	5	612	4	514	5	612	28	514	9	612	4	612	18	514	9	612	28	612	4
	MC	499	6	575	18	499	6	612	37	492	9	498c	4	612	18	492	9	455	18	575	11
	MC	499	6	587	35	492	9	612	9	492	9	612	9	498c	5	492	9	498c	5	612	9
	VC	~~492~~	~~2~~	~~587~~	~~80~~	~~499~~	~~3~~	~~612~~	~~28~~	~~499~~	13	612	4	612	18	492	18	612	28	white	
	VC	499	9	587	80	492	3	612	37	499	6	587	8	612	9	492	9	612	18	white	
RESPONSES TO MATCHING STIMULI PRESENTED INDIVIDUALLY	WW	551	10	575	11	551	10	587	68	551	10	612	9	612	18	499	13	612	18	white	
	WW	551	5	612	4	551	5	612	28	551	10	612	9	612	18	551	10	612	28	white	
	MC	499	6	575	30	551	10	498c	30	551	10	56k	17	56k	24	551	10	56k	24	551	20
	MC	499	6	587	53	499	6	612	37	499	6	56k	17	56k	24	499	6	56k	24	595	30
	VC	499	3	575	11	551	10	612	28	499	6	587	18	498c	15	551	10	612	28	white	
	VC	499	6	575	18	499	3	587	53	551	10	587	18	587	35	551	10	612	28	white	
RESPONSES TO MATCHING WITH ALL STIMULI PRESENT	WW	551	10	white		551	10	612	28	551	20	612	9	612	18	551	20	612	28	white	
	WW	551	10	575	11	551	20	612	28	551	20	612	9	612	18	551	20	612	28	white	
	MC	492	9	583	42	492	9	498c	22	455	8	612	9	56k	17	455	8	56k	24	575	30
	MC	486	13	587	35	486	13	498c	22	486	13	56k	8	612	28	486	13	612	28	575	30
	VC	551	10	575	18	551	5	612	37	551	20	587	35	587	35	551	10	612	28	white	
	VC	492	9	575	18	499	6	612	37	492	9	612	9	498c	15	499	6	612	18	white	

TABLE 1

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 1

PROJ.PR. No.	AMB. ILL.		1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	RESPONSES	572	47	572	32	572	17	572	17	572	32	575	48	572	32	572	32	572	47	478	22
	W		575	48	575	30	486	15	536	16	575	30	486	5	572	32	572	47	575	48	481	24
	R-1		583	62	575	48	583	62	587	53	575	48	583	62	583	62	575	30	583	62	481	36
	R-2		575	11	572	32	478	22	478	32	575	30	455	17	478	22	572	32	572	17	478	41
	G-1		575	48	572	47	536	24	572	11	572	32	575	47	572	17	572	47	575	47	478	22
	G-2		572	11	566	8	587	18	587	18	575	30	583	10	572	11	572	17	572	17	481	36
	Y-1		575	61	575	30	536	24	536	24	575	30	572	60	536	24	575	61	575	48	455	17
	Y-2		575	61	575	48	536	24	536	24	575	30	575	48	536	16	575	61	575	61	455	17
Chip			587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
2	W	RESPONSES	575	48	575	30	575	30	575	30	572	47	575	48	575	30	572	32	575	30	481	36
	W		575	48	575	30	566	16	566	16	575	48	572	32	572	32	572	47	575	48	478	22
	R-1		575	40	583	62	612	28	612	28	587	53	587	53	612	18	575	48	587	53	478	37
	R-2		455	4	575	18	478	22	478	22	575	30	572	11	478	22	572	32	575	11	481	36
	G-1		572	47	575	30	575	11	572	11	572	32	572	47	572	17	572	32	572	47	481	24
	G-2		575	18	575	30	566	16	566	16	575	18	587	8	481	6	572	47	587	8	481	36
	Y-1		575	61	575	48	566	24	566	24	575	48	566	24	566	24	575	61	575	30	478	32
	Y-2		575	48	575	30	566	24	566	24	575	30	575	48	566	24	575	48	575	48	478	22
Chip			587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
3	W	RESPONSES	572	47	572	32	572	17	572	11	572	17	572	17	575	18	572	32	572	17	566	24
	W		575	61	572	47	583	42	566	17	572	47	575	48	572	32	572	47	572	47	566	17
	R-1		587	53	583	62	486	19	486	19	583	62	587	53	486	12	583	62	587	53	481	36
	R-2		575	18	572	32	478	22	478	22	575	30	572	11	575	18	575	30	572	11	566	31
	G-1		566	17	566	35	551	5	490	3	572	32	551	20	572	11	575	30	566	35	566	16
	G-2		575	30	575	18	566	8	566	8	575	18	478	5	481	6	575	11	551	2	566	31
	Y-1		575	61	575	48	566	31	566	31	575	48	575	61	566	24	575	61	575	61	566	24
	Y-2		575	48	575	30	566	24	566	24	575	48	575	61	575	30	575	61	575	48	566	24
Chip			587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
4	W	RESPONSES	572	47	572	47	572	17	572	17	572	17	572	32	572	32	572	32	572	32	536	24
	W		566	8	575	27	455	17	455	17	575	27	566	8	566	8	566	8	455	17	566	24
	R-1		575	40	575	40	575	40	575	27	575	40	575	40	575	27	575	40	575	40	486	22
	R-2		486	12	486	19	566	6	478	5	612	9	612	11	612	4	612	11	612	9	536	32
	G-1		551	20	572	32	551	10	551	5	572	32	566	35	566	8	572	32	566	35	486	22
	G-2		575	12	587	35	478	5	478	5	575	18	575	11	455	4	575	11	575	18	536	32
	Y-1		575	54	575	54	455	24	455	24	575	48	575	61	575	40	575	61	575	61	536	32
	Y-2		575	48	575	30	455	17	455	24	575	61	575	48	575	30	575	48	575	30	536	32
Chip			587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
5	W	RESPONSES	572	47	572	32	572	17	572	17	572	32	575	18	572	17	572	32	572	32	566	32
	W		575	61	572	60	566	17	566	19	575	48	572	47	566	17	575	40	566	17	566	24
	R-1		575	40	575	40	575	40	575	27	575	40	575	40	575	27	575	40	575	40	478	22
	R-2		566	4	575	18	575	11	575	11	575	18	575	18	575	11	536	4	575	18	455	31
	G-1		572	32	572	17	572	11	572	11	572	17	572	32	572	11	572	32	572	17	566	16
	G-2		575	18	575	11	583	10	481	24	575	11	551	2	575	30	575	30	575	18	566	32
	Y-1		575	61	575	48	566	17	566	17	575	48	575	61	575	30	575	61	575	61	566	32
	Y-2		575	61	575	48	575	18	575	18	575	48	575	61	575	61	572	32	575	61	566	31

TABLE 2

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 1

PROJ. PR. No. / AMB. ILL.	1		2		3		4		5		6		7		8		9		back	
	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ. PR. No. 6 — RESPONSES																				
W	572	47	572	32	572	49	572	17	572	17	572	32	575	18	572	32	572	32	566	24
W	595	48	595	30	478	11	498	11	572	47	595	48	583	42	595	30	583	62	455	17
R-1	583	42	583	42	587	35	612	18	583	42	587	35	612	18	583	42	587	35	478	22
R-2	575	11	575	18	455	24	455	24	575	18	575	11	478	22	575	18	575	11	455	31
G-1	566	8	566	35	574	2	492	3	572	17	566	17	551	10	575	18	566	35	566	8
G-2	575	30	572	32	481	12	481	24	572	32	575	30	481	6	575	11	572	17	566	31
Y-1	575	61	575	48	566	24	566	31	575	61	575	48	566	24	575	61	575	61	566	24
Y-2	575	61	575	48	566	17	566	24	575	48	575	48	575	30	575	48	575	61	566	24
Chip	587	67	499	27	566	31	455	53	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 7 — RESPONSES																				
W	587	35	587	18	587	18	587	18	587	18	587	35	587	18	587	18	587	35	551	35
W	583	42	583	62	587	35	587	18	583	42	583	21	583	42	587	35	587	53	514	9
R-1	587	53	587	35	587	35	587	35	587	35	587	53	587	35	587	35	587	53	551	43
R-2	499	3	551	5	551	5	551	5	551	5	566	17	514	2	514	5	499	3	492	20
G-1	612	18	595	12	612	9	583	10	595	11	612	18	575	11	583	21	587	18	514	9
G-2	514	2	551	20	551	10	514	5	514	5	587	18	499	6	587	18	517	18	499	27
Y-1	595	54	587	53	587	68	587	35	587	35	587	68	587	35	587	53	587	68	499	20
Y-2	595	27	566	35	587	35	566	17	595	27	595	40	566	17	595	27	612	18	499	20
Chip	587	67	499	27	566	31	455	[illegible]	492	36	[illegible]	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 8 — RESPONSES																				
W	583	62	587	35	583	21	583	21	583	42	583	42	583	21	583	42	583	42	566	35
W	595	40	583	42	566	16	566	8	583	42	587	35	595	27	587	35	587	35	551	10
R-1	587	53	587	35	587	35	587	35	587	35	587	53	587	35	583	21	587	53	551	43
R-2	575	11	566	4	455	4	455	4	455	4	575	11	575	11	575	18	575	18	499	20
G-1	566	8	587	18	551	5	514	5	587	35	566	4	583	10	583	21	583	10	572	32
G-2	575	54	595	30	481	12	481	12	575	30	575	37	566	6	575	30	595	27	551	43
Y-1	595	54	587	53	583	42	583	42	587	35	587	53	583	42	587	35	587	53	514	5
Y-2	612	18	583	42	566	17	566	24	583	42	595	27	587	35	583	42	595	27	514	9
Chip	587	67	499	27	566	31	455	53	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 9 — RESPONSES																				
W	566	17	566	8	566	8	566	8	566	17	566	17	566	17	566	17	566	17	566	8
W	587	35	595	27	595	49	481	36	587	35	481	12	481	12	595	27	595	12	492	3
R-1	587	35	595	27	587	18	587	18	587	35	587	35	587	35	587	[illegible]	587	35	551	20
R-2	595	6	612	4	486	7	486	7	612	9	595	6	481	12	612	9	595	6	488	23
G-1	583	10	587	18	499	6	499	13	587	18	566	8	583	21	587	18	583	21	595	18
G-2	612	4	612	18	481	24	486	25	612	18	481	12	481	6	612	18	566	8	486	13
Y-1	587	35	595	27	481	24	486	35	587	35	575	27	583	42	587	35	595	27	486	7
Y-2	566	8	492	12	486	13	486	25	587	35	551	5	486	13	587	35	595	27	514	2
Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 10 — RESPONSES																				
W	587	11	587	18	587	11	587	18	587	11	587	11	587	18	587	18	587	18	551	10
W	612	18	583	42	583	42	566	8	583	42	583	42	595	27	612	9	595	27	486	4
R-1	587	53	587	53	587	35	587	18	587	35	587	53	577	35	587	35	587	53	514	9
R-2	455	8	455	17	478	22	478	22	478	22	478	11	455	6	478	11	478	11	488	23
G-1	583	10	587	18	566	8	551	5	595	12	575	6	514	3	566	6	551	12	514	5
G-2	486	7	612	4	481	24	486	13	612	4	595	12	488	6	587	8	612	9	488	34
Y-1	595	37	587	53	583	21	583	21	595	27	587	35	575	27	587	53	575	40	488	6
Y-2	583	62	595	40	455	17	455	17	587	53	595	37	577	35	595	27	612	18	492	3

TABLE D

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 1

PROJ.PR. No.	AMB. ILL.		1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	RESPONSES	583	42	583	42	583	42	583	21	583	42	583	42	583	42	583	42	583	42	574	5
	W		612	9	589	35	455	8	455	8	583	62	587	53	566	8	595	27	595	27	492	9
	R-1		587	53	587	35	587	35	587	35	587	35	587	53	587	35	587	35	587	35	574	15
	R-2		612	4	589	18	587	18	481	24	587	18	612	4	486	13	612	4	587	8	574	15
	G-1		577	8	595	13	557	5	566	6	587	18	583	21	589	18	587	18	583	21	575	18
	G-2		587	18	575	30	481	12	481	24	481	6	575	11	492	9	575	11	612	4	487	6
	Y-1		595	40	587	35	566	16	566	16	595	27	612	28	587	35	595	27	612	28	498	6
	Y-2		595	29	587	35	566	8	566	17	595	27	612	28	595	27	587	35	612	18	499	6
Chip			587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
12	W	RESPONSES	583	62	583	42	583	42	583	21	583	42	583	42	583	42	583	42	583	62	566	35
	W		595	40	583	62	551	20	551	20	583	42	612	28	583	42	595	27	595	27	574	9
	R-1		583	62	587	53	583	42	587	35	587	35	587	53	587	35	583	62	587	53	551	43
	R-2		583	10	589	18	583	21	583	42	583	21	587	8	587	18	583	21	583	10	551	43
	G-1		575	6	595	27	551	10	574	5	587	35	587	8	580	21	575	27	583	21	572	47
	G-2		612	4	486	7	487	12	492	9	536	8	612	28	566	17	612	9	595	12	566	75
	Y-1		595	54	587	53	587	35	583	21	595	27	612	18	595	29	612	28	612	37	574	9
	Y-2		612	37	595	40	566	8	566	17	595	40	612	37	566	17	595	40	595	54	574	15
Chip			587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13	W	RESPONSES	587	35	587	35	587	35	551	5	587	35	587	35	587	35	587	35	587	35	566	35
	W		595	27	589	35	566	17	566	35	587	35	595	12	583	42	595	27	595	27	574	2
	R-1		587	68	587	53	589	35	587	35	587	53	587	53	587	53	587	53	585	27	551	31
	R-2		492	12	587	35	478	11	478	11	587	35	492	12	587	35	492	6	492	6	566	35
	G-1		566	8	587	35	574	5	574	9	595	12	551	10	583	10	575	37	587	18	572	47
	G-2		583	21	583	42	478	22	481	24	587	18	612	9	481	12	595	12	612	9	566	54
	Y-1		595	54	612	37	589	18	551	10	595	40	612	28	589	35	595	40	612	28	574	5
	Y-2		595	40	595	40	551	10	551	20	595	40	612	18	566	16	595	27	612	18	551	20
Chip			587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14	W	RESPONSES	587	35	587	35	587	35	589	18	587	35	587	35	587	35	587	35	587	35	551	20
	W		612	18	587	53	566	17	566	17	566	8	612	18	566	17	612	18	612	18	551	20
	R-1		575	54	595	40	575	40	595	27	575	40	595	40	575	40	595	40	595	40	551	31
	R-2		492	15	582	16	566	17	566	35	536	16	536	8	492	15	492	5	492	4	551	31
	G-1		583	21	595	13	551	5	574	5	595	13	595	6	566	17	587	18	587	35	566	35
	G-2		612	9	575	12	486	7	481	6	612	18	583	21	574	5	583	10	455	4	566	54
	Y-1		595	54	612	28	551	5	551	5	595	37	595	40	587	36	595	40	612	28	574	9
	Y-2		595	40	612	28	566	17	566	35	595	40	612	28	589	53	595	40	612	28	574	9
Chip			587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15	W	RESPONSES	583	62	583	42	583	42	583	21	583	42	583	42	583	42	583	42	583	42	551	31
	W		595	37	589	35	492	3	492	3	499	3	595	37	492	3	612	18	612	28	574	5
	R-1		587	68	589	53	587	53	589	35	587	53	587	53	587	35	587	53	587	53	551	43
	R-2		492	5	536	8	536	16	574	5	536	8	536	16	536	8	536	16	492	16	551	20
	G-1		583	10	587	35	551	10	574	5	595	27	566	8	566	17	589	18	589	8	566	54
	G-2		575	11	612	4	551	10	574	5	488	6	574	2	583	42	612	9	[illegible]	12	551	43
	Y-1		595	54	595	54	612	28	566	17	595	40	612	28	595	37	612	18	612	37	574	9
	Y-2		595	40	612	28	566	17	566	35	595	40	612	28	612	18	595	37	612	28	574	9

TABLE 4

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 1

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	575	48
	W	455	4	455	19	486	25	486	25	587	35	455	8	583	42	583	21	455	4	587	18
	R-1	[illegible]	66	587	53	587	35	587	35	587	53	587	53	587	53	587	66	587	68	572	47
	R-2	612	4	612	9	478	22	478	22	612	9	612	9	612	9	612	4	612	4	575	48
	G-1	566	8	583	10	575	11	575	11	583	21	551	5	583	21	587	18	566	8	583	62
	G-2	583	10	583	21	478	11	478	11	595	6	587	8	583	21	587	18	583	10	583	78
	Y-1	587	18	595	27	551	5	551	10	612	18	455	17	455	17	612	18	455	17	587	8
	Y-2	583	21	583	42	566	17	455	17	583	42	566	4	455	17	587	18	583	10	583	10
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
17	W	572	11	572	11	572	11	572	11	572	11	587	35	572	11	572	11	572	11	572	47
	W	583	10	587	18	455	8	455	8	587	35	455	4	583	21	566	8	455	8	583	10
	R-1	587	66	[illegible]	[illegible]	587	35	[illegible]	35	[illegible]	53	587	53	587	35	587	53	587	53	566	35
	R-2	612	4	612	9	595	12	595	12	612	9	595	12	572	11	612	4	612	4	572	32
	G-1	587	8	583	21	583	10	575	11	575	11	583	10	572	11	583	10	587	8	583	62
	G-2	583	10	587	18	595	6	612	4	583	21	587	8	587	18	587	8	583	10	595	61
	Y-1	587	18	583	42	488	6	486	6	587	35	595	27	595	27	587	35	566	15	566	8
	Y-2	587	18	566	8	486	13	455	17	566	8	583	21	455	17	566	8	583	21	583	10
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
18	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	572	42
	W	583	21	583	42	587	35	587	18	455	8	583	10	583	21	595	6	595	1	566	8
	R-1	587	66	587	53	583	21	587	35	587	35	587	53	587	35	595	6	587	53	551	31
	R-2	587	8	587	18	595	12	587	18	587	16	595	6	587	18	595	6	595	6	566	35
	G-1	566	8	551	5	572	11	572	11	572	11	551	5	572	11	566	8	551	10	583	42
	G-2	583	10	587	18	595	18	572	17	583	21	587	8	587	18	587	8	583	10	595	30
	Y-1	612	18	587	35	583	21	583	21	595	27	612	18	595	27	612	18	612	28	551	5
	Y-2	583	21	566	17	566	17	455	17	566	17	583	21	566	17	583	21	583	10	566	8
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
19	W	595	6	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	40
	W	—		455	8	455	17	455	17	455	17	455	4	455	17	455	4	455	4	612	46
	R-1	595	27	595	27	595	40	595	40	595	27	595	27	595	27	595	27	595	27	595	54
	R-2	612	4	612	9	478	11	478	11	478	11	478	5	587	8	612	4	612	4	612	50
	G-1	551	5	455	6	566	31	566	8	566	8	551	5	583	10	566	8	551	10	595	54
	G-2	612	4	492	9	514	2	514	2	488	12	492	3	595	12	492	3	499	3	595	54
	Y-1	595	27	566	24	566	31	566	31	566	24	455	8	566	31	551	10	455	8	595	37
	Y-2	—		455	17	566	8	566	8	583	10	455	4	566	4	455	8	—		595	34
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
20	W	587	8	587	18	587	18	587	11	587	18	587	18	587	18	587	18	587	18	587	35
	W	481	24	481	24	583	21	587	18	455	17	455	4	587	18	455	8	455	4	595	6
	R-1	587	53	587	18	587	35	587	35	587	18	[illegible]	35	587	18	587	18	587	35	572	17
	R-2	478	5	486	24	478	22	612	9	481	24	478	5	478	5	481	12	478	5	612	18
	G-1	587	18	551	5	587	8	583	21	583	10	566	8	583	21	566	17	566	8	595	40
	G-2	486	9	486	13	551	5	583	21	478	5	455	4	551	5	492	9	455	8	486	30
	Y-1	514	2	551	10	566	24	566	31	551	20	566	8	566	17	551	5	455	8	595	18
	Y-2	486	7	486	25	566	17	566	17	486	25	587	18	478	11	486	7	481	6	595	27

TABLE 5

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 1

Proj. Pr. No.	Amb. Ill.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
21 (Responses)	W	583	10	583	10	583	10	578	10	583	10	583	10	583	10	583	10	583	10	566	8
	W	455	8	486	25	587	18	587	18	481	24	455	8	575	12	478	22	455	8	612	4
	R-1	587	53	587	35	587	53	589	53	587	18	587	53	587	18	587	18	587	35	551	10
	R-2	478	5	478	22	478	5	478	11	478	22	478	5	478	11	478	11	478	5	486	25
	G-1	551	5	566	8	578	11	578	11	578	11	566	8	583	10	583	10	583	10	587	35
	G-2	481	6	481	12	478	5	612	4	478	11	486	7	583	10	478	11	481	6	496	22
	Y-1	587	53	566	31	587	68	587	68	566	31	587	53	566	24	566	31	575	30	566	24
	Y-2	566	4	486	13	566	17	566	24	486	25	566	8	481	12	486	25	566	17	575	6
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
22 (Responses)	W	575	30	575	18	575	18	575	30	575	18	575	18	575	18	575	18	575	18	455	17
	W	583	42	455	17	575	30	575	30	566	17	575	30	455	8	566	8	575	11	566	24
	R-1	587	53	492	19	583	62	575	48	492	19	583	62	492	12	492	19	587	53	487	36
	R-2	583	10	455	17	578	11	575	11	455	17	587	8	455	17	455	24	455	4	566	24
	G-1	566	8	566	8	578	17	575	18	551	5	566	17	566	24	551	10	566	17	566	31
	G-2	575	30	478	11	578	17	575	18	481	12	575	11	575	11	478	11	575	11	566	24
	Y-1	587	53	566	31	587	68	587	68	566	31	587	53	566	24	566	31	575	30	566	24
	Y-2	575	30	566	32	575	30	575	30	566	31	575	30	566	24	566	31	575	18	566	24
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
23 (Responses)	W	583	42	583	21	583	21	583	21	583	21	583	42	583	21	583	21	583	21	499	6
	W	583	42	478	11	583	21	583	42	478	11	583	21	583	42	583	21	455	8	488	12
	R-1	575	54	575	40	575	27	575	27	575	27	575	40	575	27	575	27	575	40	551	31
	R-2	481	6	481	24	481	24	481	24	481	24	481	12	481	24	481	12	481	6	478	23
	G-1	551	5	574	2	583	10	575	11	478	11	583	10	583	10	566	8	551	5	578	11
	G-2	583	10	578	17	578	17	575	30	478	11	575	11	486	7	481	6	566	8	478	22
	Y-1	587	35	583	42	583	42	583	21	566	24	583	62	566	31	587	35	587	35	486	13
	Y-2	583	62	587	18	496	15	583	42	583	42	587	18	566	17	583	42	587	18	488	12
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
24 (Responses)	W	587	53	587	18	587	53	587	18	587	18	587	35	587	18	587	18	587	18	551	30
	W	575	18	551	5	583	21	551	5	566	17	575	27	551	10	551	5	612	18	574	5
	R-1	587	53	587	53	587	35	587	35	587	35	587	60	587	35	587	35	587	53	551	43
	R-2	612	4	587	8	587	8	587	18	587	8	612	4	587	18	587	8	612	4	574	9
	G-1	551	5	574	2	575	12	575	11	551	5	587	8	583	10	587	8	587	18	578	32
	G-2	496	12	487	6	487	12	478	5	486	9	566	8	551	5	574	2	583	10	551	20
	Y-1	587	35	583	42	583	21	583	21	587	18	575	27	583	21	587	18	575	27	574	5
	Y-2	583	42	587	35	587	35	566	17	575	27	587	8	612	18	575	27	583	42	492	3
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
25 (Responses)	W	578	11	578	11	578	11	578	11	578	11	578	11	578	11	578	11	578	11	578	32
	W	587	18	566	8	566	17	566	17	551	5	566	8	572	11	583	21	583	10	566	8
	R-1	575	54	587	53	587	53	587	35	587	35	587	68	587	53	587	53	587	68	551	31
	R-2	612	4	583	10	583	10	583	01	575	12	612	4	583	21	587	8	587	8	551	20
	G-1	574	5	583	10	583	10	578	11	587	18	587	8	583	10	587	8	583	10	583	42
	G-2	575	11	578	11	578	8	578	11	578	11	578	17	578	11	575	11	578	11	575	18
	Y-1	587	53	587	35	583	42	583	21	587	18	575	27	612	18	587	35	575	27	551	5
	Y-2	583	42	587	35	566	17	455	17	583	21	587	18	566	17	583	21	587	18	551	5

TABLE 6

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 1

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
26	W	575	6	587	18	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	27
RESPONSES	W	481	6	612	9	481	24	486	25	612	18	486	13	612	9	587	78	478	5	612	9
	R-1	587	53	587	53	561	16	587	18	587	35	587	53	587	35	587	53	587	53	598	27
	R-2	587	8	583	10	478	11	478	11	583	21	587	8	583	10	612	4	612	4	538c	8
	G-1	566	8	572	11	572	11	572	11	575	18	566	8	572	11	583	10	566	8	587	35
	G-2	612	4	583	10	478	5	481	24	583	21	478	22	587	35	595	6	478	5	490c	22
	Y-1	587	8	595	27	481	24	481	36	538c	24	583	42	595	27	612	18	587	35	595	6
	Y-2	583	10	587	18	481	12	481	24	561c	17	583	42	587	18	612	18	583	10	612	9
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
27	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	455	4
RESPONSES	W	455	8	587	18	481	12	481	24	583	42	455	17	583	21	587	8	583	10	595	6
	R-1	587	68	583	21	587	35	587	18	587	35	587	35	587	35	587	53	587	53	566	17
	R-2	612	4	612	9	478	5	455	4	492c	3	492c	6	572	11	612	4	612	4	488	12
	G-1	551	5	566	8	572	11	572	11	572	11	566	8	572	11	566	8	551	5	575	27
	G-2	583	10	583	21	478	5	478	5	587	8	481	6	587	8	583	10	612	4	538c	8
	Y-1	566	17	583	42	478	11	478	22	587	35	583	21	566c	24	587	35	575	27	488	6
	Y-2	583	10	566c	8	481	12	481	24	566c	17	583	10	455	17	566c	8	566c	17	612	4
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

TABLE 7

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	572	47	572	32	572	32	575	18	572	17	572	32	572	32	572	32	572	47	455	24
	W	575	48	575	30	587	8	566c	8	575	30	572	47	538c	16	572	47	575	27	478	22
	R-1	583	62	575	48	583	62	583	62	575	48	575	48	583	62	575	48	575	48	486	37
	R-2	575	30	575	18	478	11	478	22	572	17	572	11	478	11	572	32	572	17	486	37
	G-1	572	47	572	32	572	17	455	4	575	18	575	30	572	11	572	32	572	47	478	22
	G-2	575	48	575	30	575	30	575	30	575	30	575	48	572	32	572	47	575	30	455	24
	Y-1	572	60	575	48	566c	31	566c	31	572	47	575	61	566c	24	572	60	572	47	455	24
	Y-2	575	61	575	48	538c	24	566c	8	575	30	575	61	566c	24	575	48	575	61	455	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
2	W	572	60	572	47	572	32	575	30	575	30	572	32	572	32	572	32	572	47	455	17
	W	587	53	575	30	498c	15	498c	15	575	30	587	35	575	27	575	48	587	35	455	17
	R-1	583	62	583	62	583	62	583	62	583	62	583	62	583	62	575	48	583	62	481	36
	R-2	572	32	575	30	455	8	455	8	575	18	583	10	478	11	572	32	572	17	481	36
	G-1	575	30	572	32	572	11	551	5	572	17	575	30	572	11	572	47	575	6	478	22
	G-2	575	61	575	48	583	42	583	42	575	48	583	42	572	32	575	30	575	48	455	24
	Y-1	575	61	575	48	566c	31	566c	31	575	48	575	30	566c	31	575	61	575	48	455	24
	Y-2	575	61	575	48	538c	18	538c	24	575	48	575	61	538c	24	575	48	575	61	455	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
3	W	572	32	572	32	572	17	572	17	572	32	572	17	572	17	572	32	572	32	566c	24
	W	575	48	583	62	455	8	455	8	575	30	566	35	455	17	566	54	566	35	566c	17
	R-1	583	62	583	62	498c	12	498c	12	583	62	583	62	612	28	575	48	583	42	478	32
	R-2	575	11	478	5	478	22	478	22	572	11	575	18	455	8	575	18	575	11	455	24
	G-1	566	35	572	32	551	10	514	5	572	17	566	8	551	5	572	32	566	17	566c	24
	G-2	575	30	575	30	575	18	575	11	575	30	575	18	575	18	575	30	575	18	566c	31
	Y-1	575	61	575	48	566c	31	575	48	575	61	566c	24	575	61	575	48	566c	31	566c	24
	Y-2	575	61	575	48	566c	17	566c	24	575	48	575	61	575	30	575	61	575	61	566c	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
4	W	572	47	572	32	572	17	572	17	572	32	572	17	572	32	572	47	572	47	566c	24
	W	566	35	572	32	455	8	455	8	566	35	566	35	455	17	575	40	551	20	566c	31
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	538c	32
	R-2	587	18	587	8	583	10	478	5	575	11	575	18	575	12	575	18	575	18	538c	32
	G-1	566	35	566	17	514	5	514	5	566	17	566	8	551	5	572	32	566	8	538c	24
	G-2	572	47	572	47	572	17	491	12	572	32	572	32	572	17	572	47	572	17	538c	32
	Y-1	572	60	572	47	566c	24	566c	17	572	60	572	60	572	47	572	60	572	60	538c	32
	Y-2	572	60	572	47	455	8	455	17	572	47	572	60	572	32	575	30	575	61	566c	31
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
5	W	572	47	572	32	572	32	566	17	572	17	572	32	572	17	572	32	572	32	566c	24
	W	587	53	566	54	566	35	566	17	566	35	566	35	566	17	566	35	566	35	566c	31
	R-1	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	575	61	538c	32
	R-2	575	18	575	11	575	18	575	18	575	18	575	18	575	18	575	30	575	30	538c	32
	G-1	575	30	572	32	566	8	551	5	572	11	566	35	566	8	572	32	551	10	566c	24
	G-2	572	47	572	32	572	17	572	11	572	32	572	32	572	17	572	47	572	47	538c	24
	Y-1	575	61	575	48	575	30	575	18	575	61	575	61	575	48	575	61	575	61	566c	31
	Y-2	575	61	575	48	575	30	575	30	575	48	575	61	575	30	575	48	575	61	566c	31

TABLE 8

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	572	32	572	32	572	17	572	17	572	32	572	32	572	17	572	32	572	32	561c	17
	W	566	34	551	20	551	10	551	18	551	20	551	10	566	17	566	35	566	35	561c	17
	R-1	575	61	575	61	587	53	496c	15	583	62	583	62	583	62	575	48	575	48	455	24
	R-2	575	48	572	47	455	17	572	17	572	32	575	11	455	8	575	30	575	18	561c	31
	G-1	566	17	572	17	572	17	574	5	566	17	566	35	551	5	572	32	566	17	561c	24
	G-2	572	47	572	47	572	32	572	17	572	32	572	32	572	17	572	32	572	32	561c	24
	Y-1	575	48	575	61	561c	24	561c	31	575	61	575	48	561c	31	575	61	575	61	561c	24
	Y-2	575	48	575	30	561c	17	561c	24	575	48	575	61	575	30	575	48	575	61	561c	31
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
7	W	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	551	20
	W	595	27	587	35	566	17	566	17	612	18	612	28	551	10	595	40	595	54	492	18
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	514	20
	R-2	583	10	583	21	583	21	583	21	583	21	583	10	587	8	587	53	612	4	514	15
	G-1	583	21	587	8	575	11	572	11	583	10	587	18	551	5	587	18	575	12	514	9
	G-2	583	62	583	42	583	42	587	35	583	42	583	42	583	42	583	42	583	42	551	43
	Y-1	587	53	589	35	587	18	587	18	587	35	587	53	587	35	595	27	595	40	488	34
	Y-2	595	27	595	40	595	27	595	27	[illegible]	23	612	28	595	27	587	35	595	40	499	20
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
8	W	583	42	583	42	583	42	583	10	583	42	583	42	583	42	587	35	583	42	514	15
	W	492c	12	583	42	455	8	455	8	583	42	587	35	587	35	595	27	595	27	499	6
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	583	42	514	15
	R-2	612	4	587	8	587	18	587	18	587	18	583	21	587	18	587	18	583	21	514	9
	G-1	587	35	587	18	551	10	574	5	587	18	583	10	574	5	575	27	587	18	551	20
	G-2	583	62	583	42	583	21	583	10	583	42	583	42	583	21	583	42	583	42	551	10
	Y-1	587	53	587	35	587	35	587	18	587	35	595	27	486c	15	587	35	589	53	488	12
	Y-2	587	35	595	27	551	5	551	10	595	27	612	28	612	18	595	40	612	28	492	9
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
9	W	583	21	583	21	551	5	551	5	583	21	583	21	583	21	583	21	583	21	499	3
	W	612	18	587	35	566	17	566	17	587	35	587	18	498	5	612	18	612	28	486	13
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	514	15
	R-2	492c	12	586c	16	455	17	455	17	612	18	612	18	583	10	612	4	612	18	492	18
	G-1	566	8	587	18	574	5	574	9	587	18	566	8	574	5	575	27	566	8	514	5
	G-2	566	17	566	17	481	12	566	54	566	17	566	17	566	17	583	42	583	21	566	8
	Y-1	575	40	595	27	481	12	481	25	595	27	587	35	583	42	612	28	575	40	486	13
	Y-2	612	28	595	27	481	6	481	12	595	27	612	18	586c	8	575	40	612	28	486c	13
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
10	W	583	42	583	42	583	31	583	21	583	42	583	42	583	42	583	42	583	42	499	13
	W	595	27	587	35	566	8	566	8	583	21	[illegible]	35	551	5	612	28	612	28	488	6
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	551	31
	R-2	612	18	612	9	612	4	612	4	612	12	492c	12	612	4	575	6	612	4	492	18
	G-1	583	21	587	18	583	10	583	21	583	10	587	18	499	6	587	18	575	12	514	9
	G-2	583	62	583	42	583	21	583	10	583	42	583	42	583	10	583	62	583	62	499	20
	Y-1	575	54	575	40	586c	16	586c	16	589	53	575	40	586	27	587	53	587	53	492	9
	Y-2	587	35	595	27	586c	8	586c	8	595	27	587	35	586c	16	595	27	587	35	492	9

TABLE 9

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	587	35	587	35	587	18	587	18	587	35	587	35	587	35	587	35	587	35	499	13
	W	612	28	587	35	566	8	566	17	587	35	587	53	595	27	595	40	595	40	488	12
	R-1	587	68	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	514	20
	R-2	583	21	493c	12	612	18	566	17	493c	12	493c	6	493c	6	493c	6	493c	3	493c	18
	G-1	583	10	587	8	514	2	574	5	595	6	587	8	577	10	587	35	595	12	574	54
	G-2	587	53	587	35	587	18	587	8	587	35	587	35	587	8	587	35	587	35	514	15
	Y-1	595	40	587	53	587	35	587	35	595	27	595	40	595	27	587	53	595	40	488	23
	Y-2	583	42	587	35	551	5	551	10	587	35	595	27	612	18	595	27	612	18	492	9
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
12	W	587	53	587	35	587	18	587	18	587	35	587	35	587	35	587	35	587	35	566	54
	W	595	40	595	27	566	17	566	17	595	27	612	18	493c	12	595	27	595	27	514	9
	R-1	587	68	587	53	587	53	587	53	587	53	587	68	587	53	587	53	587	53	551	43
	R-2	583	21	587	18	587	18	583	42	595	30	493c	12	493c	12	493c	6	493c	12	514	15
	G-1	587	8	595	12	551	10	514	5	583	21	583	10	551	10	583	42	587	53	572	32
	G-2	587	53	587	35	587	18	587	8	587	35	587	35	587	18	587	35	587	35	551	43
	Y-1	595	40	587	53	587	35	566	8	587	35	595	40	583	62	587	53	595	40	514	9
	Y-2	612	28	595	27	486	15	566	8	595	27	612	28	612	18	612	28	595	27	514	9
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13	W	587	35	587	35	587	18	587	18	587	35	587	35	587	35	587	35	587	35	566	35
	W	612	18	595	27	566	17	566	17	595	27	612	18	455	8	612	18	612	18	514	9
	R-1	587	68	587	53	583	42	583	42	587	53	587	53	583	42	587	53	587	53	551	31
	R-2	493c	19	493c	12	486	25	486	25	493c	12	493c	19	478	22	493c	6	493c	6	566	35
	G-1	583	21	587	18	551	10	514	9	587	18	587	8	551	10	583	42	587	53	566	54
	G-2	587	53	587	35	566	8	587	8	587	35	587	35	587	8	595	40	587	53	566	54
	Y-1	595	40	587	53	566	8	587	18	587	53	595	40	612	18	595	40	612	28	514	9
	Y-2	595	27	612	28	455	17	455	17	595	27	612	18	566	17	595	40	612	28	514	5
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14	W	587	18	587	18	587	18	587	18	587	18	587	18	587	18	587	18	587	18	551	20
	W	612	28	595	27	566	8	566	8	587	35	612	28	566	17	595	40	612	28	551	10
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	551	43
	R-2	493c	12	612	18	595	30	566	8	612	18	612	9	493c	12	493c	3	493c	3	514	9
	G-1	583	21	587	8	566	8	551	10	583	10	583	21	566	17	587	35	595	12	566	54
	G-2	587	53	587	35	587	8	587	8	583	10	587	35	595	27	587	35	587	53	551	43
	Y-1	587	53	587	68	587	35	566	1	595	27	595	40	595	27	612	28	595	40	514	9
	Y-2	612	28	595	27	488	6	488	6	595	27	612	28	566	16	612	18	595	27	514	5
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15	W	587	35	587	35	587	35	587	18	587	18	587	35	587	35	587	35	587	35	551	20
	W	612	28	587	35	583	42	551	10	587	35	612	28	595	27	595	40	612	28	499	6
	R-1	595	40	595	40	583	21	595	40	595	40	595	40	595	40	595	40	587	35	551	43
	R-2	493c	19	612	28	612	18	612	9	612	28	493c	19	493c	12	612	4	612	4	551	31
	G-1	587	8	595	12	566	8	551	10	587	18	587	8	551	5	587	35	587	18	566	54
	G-2	583	28	583	42	583	21	583	21	587	35	587	35	583	42	587	53	587	53	551	43
	Y-1	595	40	587	53	566	1	566	8	595	27	612	28	612	18	595	27	612	28	514	9
	Y-2	595	27	612	18	587	5	551	5	612	18	595	27	566	16	595	40	595	27	499	18

TABLE 10

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16	W	595	12	575	11	575	11	575	11	595	12	575	11	575	11	575	11	575	11	575	30
	W	583	10	455	8	455	17	455	17	583	21	583	10	455	8	583	42	455	4	583	10
	R-1	595	54	595	40	595	27	595	12	595	27	595	27	595	27	587	53	595	54	583	10
	R-2	492c	12	455	17	478	22	478	22	492c	15	492c	6	478	11	492c	6	492c	6	572	32
	G-1	478	5	481	6	478	5	572	11	561c	4	486	7	587	8	583	21	551	10	583	62
	G-2	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	21	551	10	575	48
	Y-1	595	12	612	18	551	5	551	5	595	27	612	18	561c	24	612	18	612	18	583	10
	Y-2	561c	8	561c	17	478	22	478	22	561c	17	561c	24	455	17	561c	24	561c	17	572	11
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
17	W	572	11	572	11	572	11	572	11	575	11	572	11	572	11	572	11	572	11	572	32
	W	561c	8	575	11	455	17	455	17	455	17	455	8	455	17	583	10	455	8	566	8
	R-1	587	53	587	53	587	35	587	35	587	35	587	53	587	35	587	35	587	53	572	32
	R-2	492c	12	492c	15	481	12	481	12	481	6	492c	4	492c	6	492c	12	492c	12	572	32
	G-1	478	5	455	4	583	10	575	11	561c	4	478	5	583	21	583	10	551	5	583	78
	G-2	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	30
	Y-1	587	35	595	27	566	8	566	8	595	27	612	18	595	27	612	18	492c	12	566	8
	Y-2	583	21	587	18	455	17	455	17	583	21	587	18	583	21	583	42	587	18	572	32
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
18	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	W	583	10	455	8	561c	4	455	17	455	17	583	21	583	21	455	4	583	10	566	8
	R-1	595	64	595	40	595	40	595	27	595	40	595	40	595	27	595	40	595	40	551	31
	R-2	492c	6	587	18	587	8	587	8	478	11	492c	12	481	12	478	11	492c	4	551	20
	G-1	561c	4	561c	4	583	10	572	11	455	4	492c	4	551	5	566	4	551	10	583	62
	G-2	572	11	595	40	572	11	572	11	572	11	572	11	595	12	572	11	572	11	572	47
	Y-1	583	10	595	27	538c	16	538c	16	572	11	612	18	595	27	612	18	612	18	566	17
	Y-2	583	21	561c	17	455	17	455	17	561c	17	561c	24	561c	17	561c	24	561c	31	566	5
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
19	W	595	6	595	12	595	12	595	12	595	27	595	27	595	12	595	12	595	6	595	54
	W	455	4	455	8	455	17	455	17	455	8	455	4	455	17	455	4	—		612	46
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	54
	R-2	583	10	481	12	481	24	481	24	583	21	481	12	583	10	481	6	481	6	612	37
	G-1	486	7	492	9	612	9	612	9	478	11	486	7	514	2	514	5	492	18	595	54
	G-2	595	6	455	8	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	54
	Y-1	566	8	455	17	561c	17	561c	17	566	17	595	37	566	17	—		455	8	595	54
	Y-2	561c	4	455	8	595	6	595	6	561c	17	455	8	455	17	583	10	—		595	54
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
20	W	595	6	595	12	595	12	595	27	595	12	595	12	595	12	595	6	595	6	595	40
	W	478	5	455	8	455	17	455	17	478	22	478	5	478	22	478	11	478	5	595	27
	R-1	587	35	587	35	587	53	587	53	587	35	587	35	595	27	595	11	587	35	595	18
	R-2	478	22	481	24	587	35	587	35	478	22	478	11	583	10	478	11	478	11	612	18
	G-1	486	13	481	24	595	12	595	12	561c	8	492	9	587	35	478	11	478	12	595	54
	G-2	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	40
	Y-1	455	8	455	17	561c	24	566	4	478	11	561c	24	455	17	486	25	478	22	595	27
	Y-2	478	22	481	24	561c	24	561c	31	481	24	478	11	561c	24	481	36	455	4	595	27

TABLE 11

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 2

PROJ.PR.	AMB. ILL.	1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
No. 21 RESPONSES	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	42
	W	—		481	12	481	6	455	8	566	4	455	4	455	8	478	22	478	5	498c	4
	R-1	587	18	587	18	566	4	587	18	587	18	587	18	587	18	587	18	587	18	575	18
	R-2	583	10	455	17	587	8	587	8	478	22	493c	6	583	10	481	24	583	10	595	12
	G-1	551	5	499	3	492c	3	583	21	583	10	499	3	551	5	514	5	514	5	587	53
	G-2	595	6	595	6	595	6	587	18	595	6	595	6	583	21	595	6	595	6	595	12
	Y-1	—		481	24	566	17	566	24	486	25	455	8	566	24	486	37	481	24	595	6
	Y-2	—		566	8	566	17	566	24	566	8	455	17	566	17	486	37	566	17	575	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 22 RESPONSES	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	455	8
	W	583	42	455	8	575	30	575	30	455	8	583	21	583	42	455	17	583	42	566	4
	R-1	587	53	492c	19	575	48	575	48	492c	19	587	53	583	62	492c	19	584	53	481	24
	R-2	575	30	566	17	566	8	572	22	566	17	566	8	572	11	455	17	455	17	486	13
	G-1	514	2	499	3	572	17	575	18	514	5	551	10	572	17	514	5	551	10	566	24
	G-2	572	11	566	17	572	11	572	11	572	11	572	11	572	11	566	17	572	11	455	17
	Y-1	583	42	566	24	575	30	575	30	566	24	583	42	575	30	566	31	583	42	566	8
	Y-2	583	42	587	18	575	30	575	30	566	17	583	48	583	21	566	31	583	42	566	17
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 23 RESPONSES	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	566	8
	W	583	21	455	8	583	42	583	42	587	35	587	18	587	35	455	8	583	21	492	8
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	514	15
	R-2	595	27	587	35	587	18	587	18	492c	12	612	18	612	9	587	18	492c	6	499	6
	G-1	566	8	551	5	583	10	587	18	514	5	583	10	575	11	566	17	551	5	572	32
	G-2	492	3	587	8	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3
	Y-1	587	35	583	42	455	17	566	17	587	18	587	35	575	27	587	18	612	18	492	9
	Y-2	583	42	587	18	587	35	587	36	587	18	583	42	566	17	566	24	583	21	498	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 24 RESPONSES	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21	566	17
	W	587	11	455	8	583	42	583	42	455	17	583	42	583	42	455	8	583	21	551	31
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	551	31
	R-2	492c	6	587	8	587	8	587	18	587	8	492c	3	583	10	492c	6	612	18	551	10
	G-1	551	5	583	10	587	8	583	10	514	2	551	5	587	18	551	10	514	2	572	32
	G-2	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	566	35
	Y-1	587	35	587	18	566	17	566	24	583	42	575	27	566	24	583	42	575	27	499	3
	Y-2	587	35	566	8	566	17	566	24	587	35	612	18	566	17	455	8	587	35	498	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 25 RESPONSES	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17
	W	587	18	583	42	455	8	455	17	587	18	583	21	455	8	583	21	583	21	499	3
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	572	32
	R-2	587	18	566	8	455	17	455	17	583	42	583	21	455	8	455	4	566	4	551	10
	G-1	499	3	492	3	492	3	575	12	612	4	498	6	566	17	587	18	566	8	583	42
	G-2	572	11	572	11	572	11	572	11	572	11	583	21	572	11	572	11	572	11	572	32
	Y-1	587	53	587	35	455	8	566	24	583	42	575	27	566	24	583	42	575	27	492	3
	Y-2	583	42	566	8	455	4	455	8	583	21	587	8	566	17	583	42	572	11	499	3

TABLE 12

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair

PROJ.PR. No. 26

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	4	536	8
W	575	27	566	8	478	11	478	22	583	21	455	17	478	11	587	18	478	11	575	6
R-1	575	40	575	40	575	27	575	11	575	27	575	27	575	27	575	40	575	40	572	32
R-2	575	27	573	42	478	11	478	11	583	10	575	27	478	11	587	18	579	18	574	5
G-1	566	8	583	10	491	25	575	12	586	6	574	2	551	10	598	21	556	5	582	42
G-2	536	4	536	4	536	4	478	22	536	4	536	4	536	4	538	4	536	4	536	4
Y-1	573	42	577	35	491	12	486	25	583	21	585	12	566	24	587	18	583	21	498	6
Y-2	583	21	576	16	497	24	491	36	566	17	455	17	478	11	566	24	592	16	612	4
Chip	587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. 27

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
W	583	21	587	18	478	11	478	22	455	4	566	4	478	11	583	21	577	35	612	4
R-1	587	53	577	35	583	42	582	42	578	42	581	42	587	42	577	53	[illegible]	53	551	20
R-2	575	27	575	40	491	12	491	12	497	6	575	12	478	11	478	5	478	5	574	5
G-1	531	5	566	17	585	10	575	11	585	10	551	5	566	8	580	21	566	8	579	35
G-2	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	8	566	4	566	4
Y-1	581	42	577	17	566	13	455	17	580	42	577	35	[illegible]	16	587	35	[illegible]	35	478	7
Y-2	587	21	566	17	496	23	497	34	566	17	566	8	566	24	566	31	[illegible]	21	411	6
Chip	587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No.

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	White	

PROJ.PR. No.

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	White	

PROJ.PR. No.

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				

TABLE 13

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

PROJ.PR. No.	AMB. ILL. (RESPONSES)	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	572	47	572	47	572	32	572	17	572	32	572	30	572	32	572	47	572	32	455	24
	W	575	48	575	30	561c	17	566c	17	538c	16	572	47	538c	16	575	48	572	60	478	22
	R-1	575	61	583	62	583	62	587	53	587	53	587	53	587	53	583	62	587	53	455	24
	R-2	566c	4	583	21	478	11	478	11	583	21	575	11	455	17	575	30	583	21	536c	32
	G-1	572	32	572	47	575	11	481	6	572	32	572	47	478	5	572	47	575	30	478	32
	G-2	575	48	575	30	575	30	575	18	575	30	575	30	575	30	583	48	575	30	455	31
	Y-1	575	61	575	48	498c	22	536c	16	575	48	575	30	498c	22	575	48	575	48	566c	24
	Y-2	575	61	575	30	538c	16	536c	24	575	30	575	48	538c	24	575	61	575	61	455	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
2	W	572	47	575	30	575	30	575	18	575	30	575	30	575	30	572	47	575	30	455	24
	W	575	61	575	48	566c	17	566c	17	566c	24	575	30	538c	16	572	60	575	61	455	17
	R-1	587	53	587	53	587	53	498c	15	587	53	587	53	587	53	572	47	587	53	478	32
	R-2	575	11	583	21	455	8	455	8	455	4	575	11	566c	17	575	30	583	21	455	31
	G-1	572	47	572	32	486	7	486	7	572	19	575	30	478	5	572	47	575	30	478	22
	G-2	575	48	583	42	583	42	583	42	583	42	583	42	583	42	572	47	583	42	455	24
	Y-1	575	48	498c	22	536c	24	536c	24	575	30	575	48	536c	24	575	61	575	30	566c	17
	Y-2	575	61	575	48	536c	24	536c	24	575	48	575	61	536c	24	572	60	575	60	455	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
3	W	572	47	575	30	575	18	575	18	575	18	575	30	575	18	572	47	575	30	566c	24
	W	575	48	572	47	566c	17	566c	17	575	30	572	32	566c	17	572	60	575	48	566c	17
	R-1	587	53	493c	19	498c	22	498c	22	493c	19	493c	19	575	12	575	48	587	53	455	24
	R-2	575	30	583	42	455	24	455	24	575	11	575	30	455	17	572	32	572	17	566c	31
	G-1	566	35	551	10	566	5	486	24	551	10	566	17	551	10	572	47	551	10	536c	24
	G-2	575	30	575	18	566c	17	575	11	575	11	575	11	575	11	572	47	575	18	566c	31
	Y-1	575	48	575	30	566c	24	566c	24	575	30	575	48	566c	24	575	61	575	48	566c	24
	Y-2	575	61	575	48	455	17	455	24	575	61	575	61	455	17	572	60	575	60	566c	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
4	W	572	47	572	17	572	17	572	17	572	17	572	17	572	17	572	47	572	17	566c	24
	W	575	48	566c	17	566c	8	455	8	455	17	455	24	455	17	575	61	572	47	566c	31
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	498c	30
	R-2	575	27	575	40	575	6	575	6	583	21	575	27	478	5	575	12	575	12	536c	32
	G-1	572	32	551	10	574	5	499	13	566	8	572	17	574	2	572	47	566	35	498c	22
	G-2	572	47	572	32	572	17	572	11	572	32	572	32	572	17	572	47	572	17	538c	32
	Y-1	575	61	572	60	572	47	455	24	575	30	575	61	455	17	575	61	572	60	566c	31
	Y-2	575	60	572	47	572	32	455	17	572	47	572	60	455	17	575	54	572	60	566c	31
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
5	W	572	47	572	32	572	17	572	17	572	17	572	32	572	17	572	32	572	47	566c	24
	W	587	53	575	30	455	8	455	4	575	30	572	47	572	32	575	30	575	30	566c	31
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	498c	30
	R-2	575	27	575	27	571	8	579	8	572	17	575	30	595	6	575	18	575	18	566c	31
	G-1	572	32	566	8	551	5	499	6	566	8	572	32	551	10	572	47	566	17	538c	24
	G-2	572	47	572	32	572	17	572	17	572	17	572	32	572	32	572	47	572	32	538c	32
	Y-1	575	61	575	48	575	30	587	35	575	30	575	61	575	30	575	61	575	48	538c	32
	Y-2	572	60	572	47	572	32	572	32	572	47	572	60	572	32	572	60	572	60	566c	31

TABLE 14

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	570	47	575	30	570	32	570	17	570	32	570	32	570	17	570	32	570	32	455	24
	W	595	48	575	30	455	8	455	17	595	48	575	61	455	17	575	61	570	47	566	24
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	[illegible]	53	575	61	587	53	455	24
	R-2	575	30	575	30	481	24	481	24	575	18	575	30	455	24	575	30	575	18	455	31
	G-1	570	32	570	17	514	2	514	5	551	10	570	32	536	8	575	48	566	17	566	24
	G-2	570	47	570	32	570	17	570	11	575	18	570	17	570	11	570	47	570	32	566	24
	Y-1	575	61	575	48	536	24	536	24	575	48	575	61	575	30	595	61	575	[illegible]	536	24
	Y-2	570	60	572	47	570	32	570	17	570	47	570	32	455	31	570	60	570	60	566	31
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
7	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	583	42	583	42	551	20
	W	595	27	587	35	566	17	566	17	587	35	595	40	595	27	587	35	595	40	488	23
	R-1	587	53	587	[illegible]	587	53	587	53	587	53	587	53	[illegible]	53	583	42	587	53	551	43
	R-2	587	18	587	18	587	8	587	8	583	10	587	18	478	11	575	11	583	10	499	27
	G-1	583	21	587	18	583	10	595	12	612	9	595	27	551	5	587	18	595	27	574	15
	G-2	583	62	583	62	583	42	583	42	583	42	583	42	583	42	583	42	583	32	551	43
	Y-1	583	62	587	53	583	42	583	42	587	35	595	27	587	35	583	42	595	27	499	13
	Y-2	587	35	595	27	583	42	583	21	587	35	595	27	587	35	566	35	595	40	574	15
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
8	W	583	21	583	21	[illegible]	[illegible]	583	21	583	21	583	21	[illegible]	21	[illegible]	21	583	21	551	10
	W	595	27	583	42	455	8	455	8	536	16	595	27	587	18	583	21	595	40	488	12
	R-1	587	53	587	53	[illegible]	[illegible]	583	[illegible]	[illegible]	[illegible]	577	53	587	53	575	48	587	53	566	35
	R-2	492	12	595	27	587	18	587	11	587	18	492	6	492	6	583	42	583	62	492	27
	G-1	595	12	551	10	574	5	574	9	595	6	595	6	551	20	595	40	595	12	566	54
	G-2	583	62	583	42	583	21	583	10	583	42	583	62	583	21	595	40	583	42	566	35
	Y-1	595	27	587	35	587	35	583	42	583	21	595	27	587	35	583	62	583	21	492	9
	Y-2	587	35	595	27	595	27	566	17	583	42	595	27	536	16	570	47	595	40	499	13
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
9	W	583	42	583	10	551	5	551	5	551	5	551	3	551	5	583	42	587	35	551	5
	W	612	18	595	27	481	12	481	24	566	8	595	27	478	11	595	27	595	27	486	13
	R-1	587	53	587	53	583	21	587	53	587	53	587	53	587	53	587	53	[illegible]	[illegible]	551	20
	R-2	595	27	587	35	478	11	478	11	583	42	492	6	481	12	492	12	492	6	443	18
	G-1	595	6	499	3	499	13	492	18	574	5	499	3	574	9	595	40	551	5	551	20
	G-2	583	21	583	11	566	35	486	13	551	20	587	18	551	20	587	53	551	5	551	10
	Y-1	587	53	595	40	583	42	486	25	583	42	587	35	488	12	595	40	587	35	493	3
	Y-2	595	27	587	35	486	13	486	25	595	27	595	27	486	25	595	54	595	40	488	12
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
10	W	583	42	583	21	583	10	551	5	583	12	587	35	583	21	[illegible]	18	583	42	551	5
	W	595	27	551	5	566	8	566	8	587	35	595	27	566	8	595	27	595	12	486	12
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	551	31
	R-2	[illegible]	12	612	18	478	11	478	11	583	42	566	17	481	12	492	3	492	6	499	12
	G-1	587	18	587	8	551	5	574	5	583	10	587	8	574	5	595	40	587	18	551	20
	G-2	587	53	587	35	587	18	587	1	587	8	587	18	587	8	587	35	587	18	574	15
	Y-1	587	68	587	35	583	42	583	42	583	62	587	53	583	42	595	40	587	53	488	6
	Y-2	587	35	595	27	566	8	566	8	595	27	595	40	486	8	595	40	612	18	488	12

TABLE 15

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	583	21	583	21	583	21	583	10	583	10	583	21	583	10	583	42	583	42	514	2
	W	595	40	587	35	498	11	478	11	587	35	612	18	536	16	595	27	587	35	488	12
	R-1	595	40	595	40	583	42	595	40	595	40	595	40	595	40	587	35	595	40	514	15
	R-2	493	12	612	18	478	22	478	22	612	18	612	9	481	12	587	53	583	10	499	20
	G-1	583	21	583	10	551	10	551	20	583	10	587	18	551	10	587	53	587	18	551	20
	G-2	587	35	587	35	587	18	478	11	587	35	587	35	587	18	595	40	587	35	514	9
	Y-1	587	53	583	62	583	42	583	21	587	53	587	53	595	27	587	53	612	28	493	9
	Y-2	595	27	612	18	566	8	566	8	595	27	595	40	612	18	595	54	612	28	488	12
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
12	W	583	42	583	42	583	21	583	10	583	42	583	42	583	21	583	42	587	35	551	20
	W	595	27	587	35	566	17	566	17	498	15	595	27	551	5	595	27	536	16	514	9
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	551	43
	R-2	583	10	583	21	566	8	566	8	583	42	583	21	587	35	493	12	493	19	514	20
	G-1	587	18	587	8	551	10	574	9	566	17	583	10	566	17	587	53	566	8	566	54
	G-2	587	53	587	35	587	18	587	8	583	21	595	27	587	18	595	40	587	53	551	43
	Y-1	595	40	595	54	551	10	551	5	595	27	595	40	612	28	595	54	612	28	551	20
	Y-2	595	40	587	53	566	8	566	8	612	28	595	27	566	17	595	54	612	18	514	15
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13	W	583	42	583	21	583	10	566	8	583	10	583	21	583	10	583	42	583	42	566	35
	W	587	35	536	16	551	10	551	10	612	18	595	27	455	8	595	54	612	18	514	5
	R-1	595	54	595	40	595	27	595	27	595	27	595	40	583	21	595	40	595	54	551	43
	R-2	595	40	612	28	566	35	566	35	612	28	595	27	566	17	595	27	612	28	551	43
	G-1	587	18	583	21	574	9	499	13	574	5	583	10	551	20	595	40	595	12	572	47
	G-2	583	78	583	62	583	10	551	10	583	40	595	27	551	5	587	53	583	42	566	54
	Y-1	595	54	587	53	566	8	566	8	595	40	612	37	583	62	595	54	612	28	551	10
	Y-2	595	27	612	28	566	8	566	17	595	27	612	28	612	18	595	54	612	28	514	9
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14	W	583	42	583	42	583	21	551	5	583	42	589	42	583	10	583	42	583	42	551	20
	W	595	27	455	6	566	17	566	17	566	8	595	27	455	8	612	18	612	18	514	5
	R-1	587	66	587	53	583	21	587	35	587	35	587	35	587	35	[illegible]	[illegible]	[illegible]	68	551	43
	R-2	612	28	595	40	566	35	566	35	583	42	612	9	566	54	612	18	595	40	551	43
	G-1	595	12	595	6	574	5	499	6	587	8	583	10	551	10	595	27	587	18	566	54
	G-2	587	53	587	35	587	18	587	8	587	18	587	35	587	8	587	35	587	35	551	43
	Y-1	595	54	587	68	583	21	595	12	595	54	612	37	587	53	595	54	595	40	514	9
	Y-2	595	40	612	28	566	4	566	8	595	27	612	28	612	18	595	40	612	28	514	9
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15	W	587	35	587	35	587	18	[illegible]	8	587	35	587	35	[illegible]	35	587	53	583	42	566	54
	W	595	40	587	35	551	5	566	17	587	35	595	27	455	4	595	40	583	78	499	13
	R-1	595	40	595	27	595	[illegible]	595	12	595	27	595	27	595	12	595	12	[illegible]	40	551	43
	R-2	612	28	612	18	566	17	566	17	612	18	612	28	612	18	612	28	612	37	514	15
	G-1	587	8	595	6	551	10	551	20	583	10	587	18	551	10	595	27	587	18	566	54
	G-2	587	53	587	35	587	18	587	18	587	18	587	35	587	18	587	53	587	53	551	43
	Y-1	595	54	587	53	587	18	583	42	595	40	587	68	587	35	595	40	612	28	514	9
	Y-2	595	40	612	28	566	8	566	8	595	27	612	28	612	18	595	40	612	28	514	15

TABLE 16

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16	W	583	21	583	21	583	10	575	10	583	10	583	10	575	11	583	42	583	10	575	30
	W	—		455	4	481	24	481	24	481	6	595	12	481	24	595	27	566	8	583	10
	R-1	595	24	595	40	595	27	595	12	595	27	595	27	583	21	595	40	595	40	572	47
	R-2	595	27	455	17	455	24	455	24	587	18	595	12	478	22	595	12	595	6	575	30
	G-1	595	6	587	8	583	10	575	11	455	8	612	4	583	21	587	42	499	3	583	78
	G-2	583	10	455	17	583	10	583	10	583	10	583	10	583	10	587	53	583	10	575	48
	Y-1	583	21	595	27	476	11	481	24	583	21	455	17	566	17	492	19	566	8	583	21
	Y-2	583	10	566	17	481	12	481	36	566	8	566	24	481	21	566	31	566	24	575	48
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
17	W	583	42	583	42	583	21	575	11	583	10	583	21	583	10	583	42	583	10	572	32
	W	595	12	478	5	481	12	481	12	478	22	612	28	478	11	612	9	478	5	566	8
	R-1	587	68	587	53	583	21	587	35	587	35	587	53	583	21	587	53	583	21	551	20
	R-2	595	27	478	22	478	22	481	12	595	27	612	18	566	17	595	12	595	12	566	35
	G-1	583	10	583	10	575	11	575	11	566	4	455	4	572	17	583	21	566	4	583	62
	G-2	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	62	583	10	575	30
	Y-1	612	18	492	12	566	16	566	8	566	24	612	28	496	15	595	40	612	28	583	10
	Y-2	566	17	566	24	481	12	481	24	566	24	566	17	495	17	566	31	566	24	566	8
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
18	W	583	10	587	35	583	10	583	10	583	10	583	10	583	10	587	35	583	10	572	32
	W	566	8	551	5	551	10	551	10	583	21	—		595	12	478	5	587	35	551	5
	R-1	531	68	587	53	566	17	[illegible]	[illegible]	[illegible]	53	587	53	587	53	587	53	587	68	551	43
	R-2	612	18	595	27	566	17	566	17	[illegible]	6	595	27	595	12	595	6	595	12	566	35
	G-1	587	8	595	6	612	9	575	11	566	4	455	4	583	21	575	11	587	8	583	42
	G-2	572	11	572	11	572	11	572	11	566	16	572	11	583	21	587	35	572	11	572	47
	Y-1	595	28	587	35	566	24	566	24	566	16	595	40	612	18	496	15	612	28	566	8
	Y-2	566	24	566	17	455	24	566	24	566	24	566	31	566	24	566	17	566	24	566	8
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
19	W	595	12	595	4	575	12	595	27	575	12	595	12	583	2	575	12	575	12	575	54
	W	—		455	8	455	17	455	17	478	22	455	4	478	11	455	4	478	22	612	46
	R-1	575	27	595	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	54
	R-2	583	21	583	10	481	6	481	6	612	4	612	9	583	21	478	5	478	11	612	28
	G-1	481	12	481	6	595	12	583	21	486	13	481	12	595	6	587	8	486	7	575	54
	G-2	612	4	612	4	612	4	612	4	575	27	575	27	612	4	612	4	575	12	612	37
	Y-1	455	4	481	24	481	12	481	12	551	5	478	5	566	8	566	17	—		575	54
	Y-2	—		481	24	478	11	481	24	566	8	—		478	11	478	5	—		575	54
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
20	W	575	6	575	12	575	21	575	27	575	12	575	12	595	12	575	6	575	6	575	27
	W	478	22	478	32	481	24	566	17	478	22	478	5	478	11	455	8	455	4	575	40
	R-1	587	35	587	35	587	35	587	35	587	35	587	35	575	27	575	11	587	35	595	15
	R-2	478	11	481	6	492	12	492	12	587	18	587	8	496	15	486	37	486	13	492	12
	G-1	481	12	486	13	595	12	587	18	478	5	481	12	587	18	499	13	499	6	575	40
	G-2	575	6	575	12	575	12	575	27	587	18	575	12	575	12	575	6	575	6	575	40
	Y-1	481	6	481	24	566	17	566	24	551	10	478	5	566	24	486	37	455	4	575	40
	Y-2	575	6	481	12	566	17	566	24	455	8	478	5	566	24	486	37	—		575	40

TABLE 17

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
21	W	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	8
	W	478	22	455	4	561c	8	561c	8	478	5	455	4	587	18	455	17	455	4	595	6
	R-1	583	21	583	21	583	21	583	21	583	21	583	21	583	21	575	11	583	21	575	18
	R-2	478	5	486	31	595	12	595	12	587	18	587	8	595	6	486	13	575	11	595	12
	G-1	514	2	514	2	513	13	587	18	481	6	481	6	587	18	499	6	499	3	587	35
	G-2	496c	4	496c	4	496c	4	496c	4	496c	4	496c	4	496c	4	496c	4	496c	4	496c	8
	Y-1	455	8	561c	8	561c	17	561c	24	561c	24	478	11	561c	31	486	13	455	8	595	6
	Y-2	478	5	455	4	561c	17	561c	17	455	17	478	11	561c	24	486	37	478	11	595	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
22	W	572	11	575	11	572	32	572	32	572	17	572	11	572	17	572	11	572	11	561c	8
	W	583	42	587	35	575	30	575	30	583	42	587	35	575	30	455	31	583	42	455	4
	R-1	587	53	587	53	583	62	575	48	583	62	575	27	583	62	561c	8	587	53	486	25
	R-2	455	24	455	31	455	31	575	30	478	11	455	8	575	18	455	24	575	11	481	24
	G-1	481	6	566	8	572	17	572	32	572	17	556	17	575	30	478	22	566	35	561c	16
	G-2	572	11	572	11	572	17	572	32	572	17	572	17	572	17	572	11	575	18	561c	17
	Y-1	583	62	575	48	583	75	583	78	583	62	583	42	583	62	561c	31	583	42	561c	17
	Y-2	572	17	575	48	575	48	575	36	575	30	575	18	575	30	561c	31	575	18	561c	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
23	W	583	10	583	10	583	21	583	21	583	21	583	21	583	21	583	10	583	21	499	6
	W	583	42	587	35	575	18	583	42	587	8	587	35	587	35	455	24	583	42	487	12
	R-1	595	40	595	40	587	53	583	62	587	53	595	40	587	53	561c	16	587	53	574	15
	R-2	455	8	455	8	478	22	478	22	583	42	583	21	572	17	481	24	572	11	499	13
	G-1	514	2	583	10	587	8	583	21	587	8	595	6	557	35	499	13	587	8	572	17
	G-2	514	2	514	2	514	2	514	2	514	2	514	2	514	2	514	8	514	2	514	2
	Y-1	587	35	587	53	595	27	595	27	583	42	587	35	595	27	561c	31	583	42	486	6
	Y-2	583	21	587	35	587	35	455	8	583	42	583	42	561c	31	455	24	583	42	486	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
24	W	583	21	583	21	583	21	583	21	587	35	583	21	583	21	583	21	583	21	574	5
	W	587	18	587	35	583	42	583	42	583	21	587	18	583	42	481	12	583	21	492	3
	R-1	595	40	595	40	587	53	[illegible]	[illegible]	587	53	595	40	587	56	587	53	575	40	574	15
	R-2	587	12	595	12	595	27	595	31	595	15	587	8	583	21	575	30	583	21	499	13
	G-1	481	12	455	8	561c	8	[illegible]	[illegible]	561c	6	583	10	587	18	499	13	583	10	572	32
	G-2	587	35	583	10	583	10	[illegible]	[illegible]	583	10	583	10	583	10	566	6	583	10	566	35
	Y-1	587	35	587	53	595	27	561c	16	587	35	583	42	575	27	583	62	612	11	499	3
	Y-2	583	42	587	35	561c	16	561c	16	587	35	583	42	561c	24	551	31	561c	24	499	13
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
25	W	572	11	572	11	572	11	572	11	[illegible]	[illegible]	572	11	572	11	572	11	572	11	572	17
	W	587	8	587	18	[illegible]	3	478	11	587	13	587	8	587	18	583	21	587	18	572	8
	R-1	587	53	587	53	572	32	583	12	587	53	587	53	583	62	583	42	587	68	566	54
	R-2	595	12	595	27	595	27	455	4	478	11	612	9	583	10	575	18	583	21	551	20
	G-1	486	6	486	6	455	8	455	17	561c	4	478	[illegible]	486	7	583	21	587	8	583	42
	G-2	572	11	572	11	572	11	572	11	587	35	572	11	583	21	572	11	572	11	572	32
	Y-1	583	42	587	35	575	27	612	11	583	42	595	27	561c	24	583	42	612	18	574	2
	Y-2	587	35	561c	17	455	8	455	17	561c	17	587	35	561c	24	551	5	561c	24	499	3

TABLE 18

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 3

PROJ. PR. No.	AMB. ILL. (RESPONSES)	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
26	W	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	587	35	561c	4	561c	8
	W	455	4	478	5	478	22	478	22	481	12	481	6	481	24	612	9	[illegible]	6	595	6
	R-1	587	53	612	4	583	42	583	42	587	53	587	53	587	35	583	62	587	53	566	17
	R-2	492c	12	612	18	566	17	566	17	612	9	612	4	481	12	492c	12	481	6	595	12
	G-1	492	3	499	3	499	6	486	25	481	6	455	4	499	3	612	18	499	6	595	40
	G-2	612	4	612	4	612	4	612	4	612	4	612	4	612	4	612	18	612	4	612	18
	Y-1	583	42	561c	17	486	25	486	37	481	24	561c	17	566	8	492c	19	566	8	595	6
	Y-2	561c	17	455	17	478	22	481	24	481	12	561c	24	481	24	561c	31	481	24	595	6
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
27	W	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	587	35	561c	4	566	4
	W	583	10	455	4	481	24	481	24	481	12	595	6	478	5	595	6	478	4	595	6
	R-1	583	21	587	53	581	35	583	42	587	53	587	53	583	42	587	53	587	53	566	54
	R-2	492c	6	612	9	566	17	566	17	551	5	492c	12	566	17	612	4	612	4	566	8
	G-1	551	5	566	8	481	12	492	3	488	6	499	3	499	3	587	8	511	2	587	35
	G-2	536c	4	536c	4	536c	4	536c	4	536c	4	561c	17	[illegible]	4	536c	8	561c	24	536c	8
	Y-1	583	21	536c	16	566	8	478	5	492c	12	583	42	536c	16	612	28	587	18	478	6
	Y-2	561c	8	455	8	481	12	481	24	488	12	561c	17	455	17	561c	24	561c	24	486	7
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip																					
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip																					
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				

TABLE 19

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

PROJ.PR. No.	AMB. ILL.	1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
1	W	575	48	575	30	575	16	575	17	575	30	575	30	583	42	572	47	[illegible]	30	481	36
	W	575	[illegible]	538c	16	538c	18	538c	16	538c	8	575	48	538c	24	572	60	[illegible]	[illegible]	481	24
	R-1	583	62	587	53	612	28	612	28	587	53	575	61	612	28	575	48	575	40	486	37
	R-2	572	32	538c	8	566c	17	566c	17	538c	16	572	32	566c	17	572	47	566c	8	481	36
	G-1	572	17	583	21	488	12	455	8	575	12	572	17	498c	15	572	47	583	42	478	32
	G-2	575	48	583	42	583	42	583	42	583	62	575	48	583	62	575	30	583	62	481	36
	Y-1	575	61	587	68	492c	19	492c	26	575	54	575	48	575	64	572	60	575	46	478	32
	Y-2	575	61	595	54	492c	26	492c	26	575	40	575	48	492c	26	572	60	575	40	478	32
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
2	W	575	48	583	[illegible]	583	62	[illegible]	[illegible]	587	53	575	46	587	53	572	47	583	62	481	36
	W	572	47	583	42	536c	16	538c	24	556c	16	[illegible]	[illegible]	566c	24	[illegible]	60	536c	16	481	24
	R-1	587	53	492c	19	498c	22	498c	22	492c	19	587	53	498c	22	572	60	498c	22	486	37
	R-2	572	32	455	17	566c	17	566c	17	566c	8	572	32	566c	17	572	47	566c	17	481	24
	G-1	575	30	498c	5	566c	17	566c	24	612	9	572	32	538c	16	572	60	583	21	486	25
	G-2	575	48	587	53	587	35	587	35	587	35	587	53	587	53	572	47	583	42	486	37
	Y-1	575	61	575	40	566c	24	566c	31	575	40	575	48	566c	31	572	60	575	40	478	22
	Y-2	575	48	538c	32	566c	24	566c	31	566c	24	575	48	566c	31	572	60	575	40	478	32
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
3	W	575	30	583	42	583	[illegible]	[illegible]	[illegible]	583	42	575	30	583	62	572	47	583	42	566c	24
	W	572	47	572	32	455	24	455	24	455	17	572	32	455	17	572	[illegible]	572	17	566c	[illegible]
	R-1	575	40	492c	19	498c	30	498c	30	498c	30	587	53	492c	19	575	48	492c	19	486	25
	R-2	575	48	566c	17	566c	24	566c	24	575	18	572	47	566c	17	575	48	572	32	538c	16
	G-1	566	17	551	10	487	12	478	22	478	22	575	18	487	12	575	43	566	17	498c	15
	G-2	575	30	583	42	583	21	583	21	583	21	575	18	583	21	572	47	583	21	566c	16
	Y-1	575	61	575	30	566c	24	566c	31	566c	17	575	48	566c	31	572	60	575	30	566c	17
	Y-2	575	48	575	30	566c	24	566c	31	575	30	575	48	566c	24	572	60	575	48	566c	17
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
4	W	572	47	572	17	572	17	572	11	572	11	572	17	572	11	575	48	[illegible]	11	[illegible]	32
	W	575	48	455	19	455	24	455	[illegible]	455	[illegible]	575	30	[illegible]	24	572	60	455	17	[illegible]	31
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	538c	32
	R-2	498c	15	538c	16	538c	8	538c	8	498c	5	498c	15	498c	8	612	37	538c	16	538c	24
	G-1	575	30	487	6	478	11	497	22	551	10	572	32	551	5	575	47	551	10	492c	26
	G-2	575	48	575	11	575	18	575	11	575	11	575	30	575	11	575	48	575	18	498c	22
	Y-1	575	54	566c	24	455	17	455	24	575	30	575	61	455	24	575	54	455	17	538c	32
	Y-2	575	61	575	48	455	24	455	31	575	48	575	61	455	21	575	54	575	48	538c	32
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
5	W	572	32	[illegible]	17	572	17	[illegible]	11	[illegible]	11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	566c	24
	W	551	[illegible]	551	[illegible]	455	8	455	8	[illegible]	19	[illegible]	35	[illegible]	19	[illegible]	[illegible]	[illegible]	[illegible]	566c	31
	R-1	575	40	575	40	575	40	575	40	575	40	575	46	575	40	575	40	575	40	498c	30
	R-2	575	40	575	12	575	6	575	6	538c	16	595	27	575	12	575	27	[illegible]	16	538c	32
	G-1	572	17	566	8	574	2	497	13	551	10	572	17	566c	8	575	30	566	17	538c	24
	G-2	572	17	572	32	572	17	572	17	572	17	572	32	572	17	572	47	572	17	538c	24
	Y-1	575	61	575	48	566c	17	455	17	575	30	575	61	575	30	595	54	575	61	566c	31
	Y-2	575	61	575	48	566c	24	455	24	575	48	575	61	575	30	575	64	575	48	538c	32

TABLE 20

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

PROJ. PR.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 6	W	572	17	572	17	572	11	572	11	572	11	572	17	572	11	572	47	572	11	455	24
	W	575	48	478	22	455	17	455	24	575	30	575	48	455	24	572	60	575	48	566	31
	R-1	583	62	587	53	492	19	492	19	612	28	587	53	492	19	575	48	595	40	481	36
	R-2	572	32	572	17	478	22	478	22	455	17	572	47	566	17	572	47	575	30	455	17
	G-1	572	17	551	5	481	12	481	12	492	9	575	18	455	8	572	47	551	10	538	16
	G-2	575	30	575	18	575	11	575	11	575	11	575	30	575	11	572	47	575	18	566	24
	Y-1	575	61	575	48	566	24	566	31	575	48	575	61	538	32	572	60	575	61	566	24
	Y-2	575	61	575	48	566	31	566	31	575	48	575	48	566	24	572	60	575	48	566	17
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 7	W	481	24	481	24	481	24	481	24	481	24	481	24	481	24	481	24	481	24	514	20
	W	551	20	587	53	551	20	551	20	587	35	566	54	587	35	566	35	595	40	514	20
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	514	20
	R-2	574	2	551	5	574	5	574	5	574	2	574	9	478	6	595	30	595	12	574	15
	G-1	583	10	587	18	595	11	499	3	583	10	587	18	587	18	572	17	595	67	574	15
	G-2	583	62	583	78	583	62	583	42	583	42	583	42	583	42	583	21	583	62	551	43
	Y-1	587	53	595	40	587	35	587	35	595	40	587	53	595	40	587	61	595	54	499	20
	Y-2	595	27	587	35	595	27	612	18	612	28	595	27	612	28	595	48	595	40	574	20
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 8	W	587	35	[illegible]	35	587	35	[illegible]	[illegible]	[illegible]	35	587	[illegible]	587	35	587	35	583	42	551	10
	W	575	27	587	35	566	17	566	17	538	16	583	62	538	8	575	61	538	16	566	8
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	575	48	595	40	514	15
	R-2	595	27	585	40	595	12	595	12	583	21	[illegible]	45	583	21	572	47	595	27	574	9
	G-1	595	12	551	10	551	5	551	20	514	5	595	12	551	10	575	48	587	8	572	32
	G-2	583	62	583	42	583	42	575	11	583	21	583	42	583	10	575	48	583	42	572	32
	Y-1	587	53	595	40	587	35	587	35	595	27	587	53	595	27	583	78	595	48	499	6
	Y-2	595	27	587	35	566	17	455	17	587	35	595	27	612	18	575	61	595	40	574	9
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 9	W	583	21	566	[illegible]	566	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	583	10	566	6	587	54	566	[illegible]	566	4
	W	587	35	455	24	481	36	455	17	566	17	566	17	478	13	587	68	486	25	478	6
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	587	68	595	40	514	5
	R-2	612	18	612	9	481	24	481	24	455	17	595	40	486	25	492	19	612	18	499	6
	G-1	595	12	551	10	574	5	499	13	499	13	572	17	574	9	587	68	566	17	587	53
	G-2	583	10	551	5	551	10	551	10	551	31	551	5	551	20	587	35	551	20	538	4
	Y-1	587	53	566	17	486	25	486	37	486	25	587	35	486	37	587	68	583	42	486	7
	Y-2	595	12	486	25	486	37	486	37	486	25	566	17	486	37	595	54	486	25	486	7
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 10	W	583	21	566	6	566	6	566	17	566	[illegible]	583	10	566	6	583	42	566	[illegible]	574	2
	W	538	16	455	8	486	13	486	25	481	12	455	4	478	23	587	53	538	16	499	12
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	574	5
	R-2	492	12	595	27	481	12	481	12	492	6	486	15	481	12	492	12	492	6	499	6
	G-1	595	6	551	10	574	2	499	13	514	5	583	21	514	9	587	68	551	10	574	9
	G-2	566	8	566	8	566	8	566	35	566	8	566	8	538	17	575	48	566	8	551	10
	Y-1	587	53	583	62	486	13	486	25	583	42	587	35	486	13	595	54	587	35	499	6
	Y-2	595	40	486	13	486	25	486	37	595	27	595	27	486	13	595	54	595	67	486	13

TABLE 21

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11 (RESPONSES)	W	583	21	583	10	583	10	583	10	583	10	583	21	583	21	583	42	583	42	514	9
	W	587	35	587	18	455	17	455	17	455	8	566	8	455	4	583	62	583	42	488	12
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	514	20
	R-2	595	27	595	40	486	7	486	7	583	21	583	42	595	12	575	30	595	6	499	13
	G-1	583	21	551	5	551	10	514	9	551	5	583	21	551	10	583	62	551	10	551	20
	G-2	583	62	583	42	583	21	583	10	583	21	583	42	583	21	575	48	583	42	499	6
	Y-1	587	53	583	62	583	42	583	42	587	35	583	42	587	35	583	62	583	42	486	13
	Y-2	575	40	575	27	481	12	481	24	595	27	587	35	587	18	587	68	595	27	486	25
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
12 (RESPONSES)	W	583	21	583	42	583	21	583	21	583	21	583	42	583	21	575	48	583	42	566	35
	W	595	27	587	35	455	8	455	17	455	8	595	27	566	17	583	62	582	16	514	9
	R-1	492	19	492	19	492	19	492	19	492	19	492	19	492	19	492	22	492	19	514	20
	R-2	612	18	595	27	583	21	583	21	551	11	583	21	583	21	587	35	583	42	514	15
	G-1	583	21	582	4	566	8	514	5	514	5	587	18	551	10	583	62	454	4	572	60
	G-2	587	53	587	35	587	17	587	8	587	18	587	35	587	8	575	61	587	53	566	56
	Y-1	587	35	583	42	[illegible]	24	566	24	583	42	587	65	583	42	583	[illegible]	[illegible]	53	[illegible]	9
	Y-2	575	40	575	27	583	21	455	17	612	18	595	27	582	4	587	68	612	11	514	9
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13 (RESPONSES)	W	573	62	583	21	583	10	551	20	551	10	583	21	551	10	587	53	551	5	572	17
	W	595	40	455	17	486	13	486	25	486	13	612	18	486	25	575	54	481	24	551	5
	R-1	612	28	612	28	612	28	612	28	612	28	612	28	612	28	574	53	612	28	551	31
	R-2	514	15	492	12	486	25	486	25	481	12	492	12	566	6	612	28	612	11	551	10
	G-1	587	18	574	9	499	6	499	13	574	9	575	12	574	9	575	54	551	10	575	48
	G-2	583	62	583	10	583	10	551	20	551	5	583	42	551	10	575	40	566	8	572	32
	Y-1	575	40	587	53	488	6	488	12	486	13	587	53	481	24	575	54	574	36	551	10
	Y-2	575	27	582	24	499	13	499	20	582	16	612	37	499	13	575	54	566	24	551	20
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14 (RESPONSES)	W	582	62	[illegible]	[illegible]	566	[illegible]	[illegible]	11	[illegible]	10	583	42	566	6	587	53	583	10	566	35
	W	612	18	595	27	488	[illegible]	488	6	481	12	612	18	455	12	612	37	612	18	499	6
	R-1	575	57	595	40	595	27	575	12	575	27	575	40	575	27	574	68	575	40	551	43
	R-2	492	12	595	27	566	8	566	8	551	5	492	3	514	5	612	26	612	18	551	20
	G-1	595	12	574	5	499	9	499	13	574	5	571	18	551	20	587	68	612	4	572	47
	G-2	583	62	583	10	583	10	566	35	566	8	583	42	566	35	575	40	583	42	551	34
	Y-1	575	40	612	28	566	8	566	17	583	42	575	40	566	24	575	54	612	28	574	9
	Y-2	575	40	612	28	582	16	566	35	566	17	612	28	566	17	612	46	612	28	566	35
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15 (RESPONSES)	W	583	62	[illegible]	42	583	42	583	21	[illegible]	[illegible]	[illegible]	42	583	21	583	62	[illegible]	42	551	31
	W	595	37	574	35	492	3	492	3	574	18	574	35	455	6	582	24	612	18	514	5
	R-1	575	40	575	40	575	27	575	37	575	40	575	40	575	27	575	37	575	54	574	20
	R-2	612	18	574	18	[illegible]	35	583	21	574	18	583	21	583	[illegible]	587	35	575	6	514	9
	G-1	587	18	551	5	551	10	514	9	574	5	575	12	551	10	575	40	612	4	572	47
	G-2	583	78	583	62	583	10	551	5	583	42	583	62	551	5	575	40	583	62	566	34
	Y-1	575	40	612	28	492	15	492	15	583	62	583	40	612	28	582	[illegible]	612	28	574	9
	Y-2	612	26	575	27	566	8	566	17	612	18	575	40	566	17	575	31	612	31	574	15

TABLE 22

Wavelength (λ) and Excitation Purity (Pe); Narrowband Slide Pair 4

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16	W	583	42	583	21	583	21	583	13	583	21	583	42	583	21	583	62	583	10	583	42
	W	—		514	5	514	9	514	15	514	9	455	8	514	15	612	18	514	9	583	10
	R-1	575	54	575	40	575	27	575	13	575	40	575	40	575	13	577	53	575	40	572	32
	R-2	575	12	556	8	478	22	478	22	478	22	612	9	486	25	575	40	486	13	583	42
	G-1	486	4	551	10	575	18	514	5	514	5	577	18	551	10	577	53	514	5	583	28
	G-2	583	42	583	10	583	10	583	10	583	10	583	62	583	10	575	54	583	10	583	62
	Y-1	612	18	492	9	551	5	514	5	514	2	566	24	514	15	486	26	514	2	577	8
	Y-2	566	24	488	12	499	6	499	13	492	18	566	24	499	20	566	32	488	12	577	8
Chip		587	67	499	27	560	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
17	W	583	21	583	10	583	10	575	11	583	10	583	21	583	13	583	62	583	10	575	30
	W	455	4	478	5	486	13	486	25	488	12	455	4	499	6	566	24	488	13	583	10
	R-1	575	54	575	40	575	27	575	27	575	40	575	40	575	27	577	53	575	41	578	47
	R-2	612	11	566	8	481	6	481	13	478	22	612	9	478	11	612	4	566	8	575	30
	G-1	486	7	488	12	578	17	578	17	583	10	577	18	583	10	577	42	514	2	583	62
	G-2	583	21	583	10	583	10	583	11	583	10	583	42	583	10	577	53	583	10	575	48
	Y-1	612	18	566	8	499	3	486	9	499	3	486	12	514	2	486	32	566	17	583	70
	Y-2	566	17	492	3	492	9	499	6	499	3	566	31	499	13	566	31	566	17	583	10
Chip		587	67	499	27	560	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
18	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	572	17
	W	566	4	455	4	455	8	455	1	566	8	455	4	566	4	455	17	566	4	578	11
	R-1	575	40	575	54	575	27	575	27	575	40	575	40	575	40	566	16	575	54	551	43
	R-2	612	4	575	6	583	11	583	10	583	21	577	18	575	6	566	4	612	4	514	5
	G-1	612	4	492	3	572	17	572	17	492	5	612	9	583	21	578	18	566	8	583	42
	G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	Y-1	566	16	577	35	583	21	583	42	577	35	577	18	577	35	566	31	577	35	499	3
	Y-2	566	4	583	21	566	17	566	17	583	21	566	17	583	31	583	31	583	21	492	8
Chip		587	67	499	27	560	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
19	W	575	13	575	13	575	13	575	[illegible]	575	12	575	12	575	12	575	12	575	12	575	54
	W	478	5	478	11	481	21	481	21	478	11	478	32	478	5	478	11	478	5	575	54
	R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	54
	R-2	577	11	566	8	566	17	566	17	566	8	551	5	583	21	566	8	566	17	612	57
	G-1	514	5	486	13	575	18	575	18	583	10	551	5	577	8	577	18	514	5	575	54
	G-2	575	12	575	12	575	27	575	27	575	12	575	12	575	12	575	12	575	6	575	54
	Y-1	455	8	455	17	478	11	478	11	478	5	455	8	478	11	455	8	—		575	54
	Y-2	492	10	492	17	478	11	478	32	583	10	455	8	583	21	566	17	455	4	[illegible]	54
Chip		587	67	499	27	560	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
20	W	583	10	583	21	583	42	583	42	583	21	583	10	583	21	575	11	583	10	486	15
	W	486	25	514	5	566	8	566	16	487	5	486	37	566	16	487	34	488	12	[illegible]	9
	R-1	[illegible]	37	[illegible]	40	575	40	575	40	575	40	575	40	575	40	575	11	575	54	572	17
	R-2	[illegible]	33	[illegible]	16	575	12	575	12	486	6	[illegible]	25	575	16	486	37	575	27	575	12
	G-1	514	5	486	2	583	21	583	21	612	4	[illegible]	6	583	21	514	5	577	8	575	40
	G-2	566	8	566	8	577	55	577	55	577	11	577	16	577	15	551	30	566	8	577	53
	Y-1	[illegible]	36	478	11	566	24	566	31	478	5	[illegible]	[illegible]	[illegible]	31	[illegible]	37	[illegible]	17	[illegible]	12
	Y-2	486	13	478	5	566	24	566	31	566	4	486	25	566	31	[illegible]	37	455	4	[illegible]	37

TABLE 23

Wavelength (λ) and Excitation Purity (Pe); Narrowband Slide Pair 4

PROJ. PR. / AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
PROJ. PR. No. 2 — W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	575	11	573	10	566	4
W	486	25	577	18	566	4	577	18	477	5	481	6	612	9	488	23	612	9	575	6
R-1	577	53	577	53	577	53	577	53	577	53	577	53	577	53	572	17	577	53	572	32
R-2	488	6	488	12	492	3	477	3	575	12	481	24	575	12	481	24	575	12	481	12
G-1	574	5	551	10	583	10	577	18	551	5	574	2	551	5	572	17	566	8	577	35
G-2	575	6	575	6	575	6	575	6	575	6	575	6	575	6	572	11	575	6	575	12
Y-1	582	8	566	17	566	24	566	24	566	17	486	23	566	31	486	37	566	[illegible]	575	6
Y-2	486	25	566	8	566	31	566	24	566	8	486	13	566	31	486	37	566	24	575	6
Chip	507	67	499	27	581e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 22 — W	572	17	572	32	572	32	572	47	572	32	572	32	572	47	566	8	572	17	566	24
W	575	30	575	48	572	47	572	47	572	47	575	11	575	48	566	31	575	48	566	24
R-1	486	19	575	40	575	40	575	48	583	62	577	41	575	48	566	24	583	62	455	24
R-2	583	21	583	42	583	62	583	62	583	42	577	18	583	42	566	31	583	42	566	24
G-1	574	2	566	35	578	17	578	32	572	17	488	12	578	32	478	32	566	35	566	24
G-2	583	16	572	32	572	17	572	32	572	17	572	17	572	47	566	8	572	32	566	24
Y-1	575	48	575	61	575	48	575	61	575	41	575	30	566	41	566	31	575	[illegible]	566	31
Y-2	575	30	575	48	575	48	575	48	575	61	575	30	575	48	566	31	575	61	455	17
Chip	507	67	499	27	581e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 23 — W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	577	11	583	21	574	9
W	566	8	577	35	566	17	575	27	612	18	566	8	612	18	486	37	612	18	488	12
R-1	577	53	577	53	577	53	577	53	577	53	577	53	577	53	575	11	577	53	477	20
R-2	577	18	577	8	575	27	575	27	583	42	583	21	583	21	486	25	577	18	477	20
G-1	574	5	577	18	575	18	583	42	577	35	574	2	577	35	574	15	577	18	574	9
G-2	566	17	583	42	583	21	583	21	583	40	583	21	583	42	574	9	577	35	574	9
Y-1	577	35	575	27	583	42	583	42	577	35	583	42	577	35	486	35	577	35	487	23
Y-2	575	30	583	62	583	42	577	35	575	40	577	33	583	62	455	24	583	42	455	24
Chip	507	67	499	27	581e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 24 — W	583	21	583	21	583	21	583	21	[illegible]	1	[illegible]	[illegible]	[illegible]	1	566	17	583	1	551	31
W	551	5	575	27	566	8	486	15	566	8	566	17	612	18	551	31	486	12	477	13
R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	551	43
R-2	577	11	577	8	575	12	575	12	575	27	577	18	577	18	551	24	575	27	574	15
G-1	551	10	583	21	575	12	575	27	577	18	551	10	575	27	574	15	577	18	566	54
G-2	577	18	577	53	577	18	575	27	577	35	571	18	577	53	566	35	577	53	566	54
Y-1	577	35	575	40	583	42	[illegible]	[illegible]	575	40	577	53	612	31	566	57	612	31	566	35
Y-2	582	31	612	24	566	17	[illegible]	35	612	39	612	18	612	[illegible]	[illegible]	[illegible]	[illegible]	24	[illegible]	[illegible]
Chip	507	67	499	27	581e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 26 — W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	[illegible]	1	572	11	572	32
W	583	21	566	8	566	17	566	17	566	4	566	8	566	17	566	35	566	8	566	8
R-1	575	40	575	57	575	[illegible]	575	[illegible]	575	57	575	[illegible]	575	57	575	48	575	57	566	54
R-2	577	18	577	8	583	21	583	21	486	12	486	6	575	27	575	48	575	27	566	[illegible]
G-1	577	18	486	6	575	12	575	12	478	11	575	12	481	6	575	18	[illegible]	8	583	62
G-2	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	30
Y-1	577	18	577	[illegible]	566	16	566	16	583	42	583	35	612	18	566	35	612	18	551	5
Y-2	583	21	577	18	478	8	455	17	583	21	583	10	455	17	583	62	583	42	551	5

TABLE 24

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 4

PROJ.PR. No.	AMB. ILL. / RESPONSES	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
26	W	583	10	583	10	[illegible]	[illegible]	583	10	583	10	583	[illegible]	[illegible]	[illegible]	589	53	583	10	498c	5
	W	587	18	481	12	486	25	486	37	486	25	536c	16	486	25	498c	22	486	13	595	6
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	587	53	595	27	578	32
	R-2	595	40	485	8	478	22	481	24	471	12	587	18	486	13	595	54	486	7	595	12
	G-1	481	6	499	6	572	17	583	21	455	8	536c	8	574	6	595	27	574	5	595	40
	G-2	583	42	583	10	583	62	583	62	583	10	583	42	583	10	587	53	583	10	595	40
	Y-1	612	18	566c	17	486	25	486	37	486	25	561c	24	486	37	612	37	486	13	595	6
	Y-2	612	28	455	8	486	25	486	37	486	13	561c	24	486	25	612	46	486	13	612	4
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
27	W	583	21	573	10	[illegible]	[illegible]	[illegible]	[illegible]	583	10	583	31	583	11	583	[illegible]	583	10	536c	4
	W	575	11	455	8	453	17	455	24	471	12	515	11	486	13	498c	15	488	6	595	6
	R-1	595	40	595	27	595	27	595	12	595	27	595	27	595	12	587	68	595	27	566	17
	R-2	498c	15	566c	8	455	4	455	8	561c	4	538c	4	514	5	595	40	514	2	498c	4
	G-1	566c	4	455	4	455	8	455	8	478	11	455	4	551	10	583	42	514	5	587	18
	G-2	583	[illegible]	583	10	583	10	583	10	583	10	583	10	583	10	583	62	583	10	583	42
	Y-1	583	42	566c	17	486	13	486	25	488	12	566c	24	488	33	566c	31	[illegible]	24	612	4
	Y-2	587	18	583	42	481	12	481	36	583	10	583	42	481	12	587	35	587	18	486	7
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip																					
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip																					
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				

TABLE 26

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

PROJ. PR. No.	AMB. ILL.	RESPONSES	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	W	575	61	575	41	575	30	575	18	575	30	575	30	575	30	572	47	572	30	455	24
	W	W	575	48	532	16	566	8	566	8	532	24	572	47	566	24	572	47	532	16	478	22
	R-1	R-1	575	61	583	62	575	30	575	30	583	62	575	61	583	42	575	48	583	42	486	25
	R-2	R-2	572	32	583	21	478	5	478	5	583	42	587	35	595	27	572	47	572	19	478	41
	G-1	G-1	572	32	572	17	572	11	551	5	575	18	575	30	455	4	572	32	575	18	455	24
	G-2	G-2	575	48	575	30	575	18	575	18	575	30	575	30	575	30	572	32	575	30	455	31
	Y-1	Y-1	575	61	575	30	532	16	532	16	575	48	575	61	532	24	572	60	575	48	478	22
	Y-2	Y-2	575	61	575	41	532	24	532	24	575	30	575	61	532	24	572	60	575	61	455	24
Chip			507	67	499	27	5616	31	455	33	498	36	612	37	486	37	575	61	551	40	WHITE	
2	W	W	575	48	575	48	575	18	575	18	575	30	575	30	575	30	572	47	575	48	455	24
	W	W	575	30	496	15	532	8	532	8	455	17	572	32	566	17	572	47	532	16	478	22
	R-1	R-1	575	61	587	53	587	35	587	35	587	35	587	53	587	53	572	47	587	53	486	37
	R-2	R-2	583	42	587	35	455	4	455	8	587	35	583	21	595	12	572	47	595	27	478	32
	G-1	G-1	572	32	566	8	496	4	481	6	572	11	572	32	478	11	572	47	587	18	478	32
	G-2	G-2	575	48	572	32	572	17	572	17	572	32	572	32	572	32	572	32	[illegible]	32	575	48
	Y-1	Y-1	575	48	566	24	566	17	566	17	575	48	575	61	566	24	572	47	575	48	478	22
	Y-2	Y-2	575	48	532	24	532	16	532	16	532	24	575	61	532	24	572	60	575	61	455	24
Chip			507	67	499	27	5616	31	455	33	498	36	612	37	486	37	575	61	551	40	WHITE	
3	W	W	575	30	575	18	575	18	575	11	575	18	575	30	575	18	572	32	575	18	566	24
	W	W	575	48	583	42	455	8	455	17	575	48	572	47	566	17	572	60	575	48	566	24
	R-1	R-1	587	53	587	53	587	35	587	35	587	53	587	35	587	53	572	47	587	53	487	24
	R-2	R-2	583	[illegible]	583	21	587	35	585	18	575	12	575	30	455	24	572	60	595	6	532	24
	G-1	G-1	566	35	551	10	572	11	574	2	551	10	572	17	574	5	572	47	566	35	532	24
	G-2	G-2	575	30	575	18	575	18	575	18	575	18	575	30	575	18	575	48	575	18	532	24
	Y-1	Y-1	575	61	575	48	566	17	566	24	575	48	575	61	566	24	575	61	575	30	566	24
	Y-2	Y-2	575	61	575	48	575	30	566	24	575	61	575	61	575	30	572	60	575	30	566	24
Chip			507	67	499	27	5616	31	455	33	498	36	612	37	486	37	575	61	551	40	WHITE	
4	W	W	572	32	572	17	572	17	577	11	572	17	572	17	572	17	575	30	572	17	566	24
	W	W	575	54	532	16	566	4	566	8	455	8	572	47	595	27	595	54	532	16	566	31
	R-1	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	575	40	595	40	496	30
	R-2	R-2	595	54	612	21	496	5	496	5	612	18	595	18	587	18	595	27	578	30	532	24
	G-1	G-1	566	17	574	5	551	10	574	5	574	5	575	18	574	5	575	48	551	20	496	19
	G-2	G-2	575	30	575	11	575	18	575	18	575	18	575	30	575	18	575	48	575	18	532	22
	Y-1	Y-1	575	61	575	48	532	16	532	24	575	48	575	61	575	48	575	61	575	61	566	31
	Y-2	Y-2	575	61	575	48	575	30	566	17	575	48	575	61	575	30	595	54	575	48	532	32
Chip			507	67	499	27	5616	31	455	33	498	36	612	37	486	37	575	61	551	40	WHITE	
5	W	W	572	47	572	32	572	32	572	17	572	32	572	32	572	32	572	47	572	32	566	24
	W	W	575	48	575	30	566	8	566	4	572	47	575	61	595	12	575	61	572	47	566	31
	R-1	R-1	575	40	595	40	575	40	575	40	575	40	575	40	595	40	575	40	587	40	532	32
	R-2	R-2	583	62	583	42	583	10	583	10	575	30	575	48	455	17	575	27	587	35	532	32
	G-1	G-1	572	32	566	17	566	8	551	5	566	17	572	17	574	5	575	30	566	17	532	16
	G-2	G-2	575	30	575	18	575	18	575	18	575	30	575	48	532	24	575	30	575	18	575	18
	Y-1	Y-1	575	61	575	48	575	30	575	30	575	61	575	61	575	48	575	61	575	61	566	31
	Y-2	Y-2	575	61	575	48	575	30	575	40	575	48	575	61	575	48	575	61	575	61	532	32

TABLE 26

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

		1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 6 — RESPONSES	AMB. ILL. W	572	47	572	32	572	17	572	11	572	17	572	32	572	17	572	47	572	17	455	24
	W	575	48	575	30	572	32	566	8	572	47	572	60	538	16	572	60	575	48	566	24
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	572	47	587	53	481	36
	R-2	575	48	583	42	575	12	575	12	583	21	583	42	583	21	575	30	575	18	538	16
	G-1	566	17	551	10	572	11	572	11	566	17	572	17	574	2	612	47	566	17	566	24
	G-2	575	30	575	30	575	18	575	18	575	30	575	30	575	18	575	48	575	18	566	31
	Y-1	575	30	575	48	566	24	566	17	575	42	575	61	538	24	575	61	575	61	538	24
	Y-2	575	61	575	48	566	17	575	30	575	48	575	61	575	30	572	60	575	48	566	31
	Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 7 — RESPONSES	AMB. ILL. W	572	32	572	32	572	32	572	32	572	32	572	32	572	32	572	32	572	32	551	31
	W	583	62	587	53	587	35	587	35	575	27	575	40	583	42	583	42	575	40	492	18
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	574	20
	R-2	575	27	612	18	551	10	551	20	583	21	583	10	575	27	587	35	587	18	574	9
	G-1	575	27	575	12	492	3	572	11	575	6	575	12	575	6	612	9	612	18	574	15
	G-2	583	62	583	62	583	21	583	21	583	42	583	42	583	42	583	42	583	62	551	43
	Y-1	583	42	587	35	551	5	551	10	587	35	575	27	587	35	583	42	587	27	499	13
	Y-2	575	27	575	40	566	8	566	17	575	27	575	40	612	18	587	53	575	40	492	27
	Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 8 — RESPONSES	AMB. ILL. W	587	18	587	18	587	11	587	18	587	18	587	18	587	18	583	62	587	18	551	20
	W	575	27	587	35	583	42	481	24	583	42	587	35	575	27	583	54	575	40	492	9
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	551	43
	R-2	575	27	575	12	478	11	478	11	587	35	612	9	492	15	587	35	612	18	499	13
	G-1	583	21	574	2	583	10	575	11	551	11	583	21	551	10	583	62	551	10	566	35
	G-2	583	42	583	42	583	62	583	10	583	62	583	42	583	10	575	48	583	42	566	17
	Y-1	575	27	587	35	583	21	583	21	587	35	575	42	587	35	587	53	575	27	492	9
	Y-2	587	53	575	27	587	35	566	17	575	27	575	60	612	18	587	48	612	28	492	18
	Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 9 — RESPONSES	AMB. ILL. W	583	21	583	10	583	10	583	10	583	10	583	21	583	10	583	62	583	21	551	10
	W	575	40	478	11	481	12	481	24	481	24	575	27	455	17	575	54	575	40	575	6
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	551	31
	R-2	575	27	587	18	575	6	575	6	575	27	612	4	499	12	575	27	575	40	499	33
	G-1	587	8	574	5	499	3	499	3	551	10	583	10	499	13	587	53	574	5	499	6
	G-2	566	8	566	8	566	8	566	8	566	8	566	8	566	35	583	62	566	17	566	35
	Y-1	575	27	587	35	583	21	583	21	587	35	575	21	486	10	575	27	587	35	[illegible]	3
	Y-2	575	27	566	18	486	7	486	13	486	7	575	27	486	13	575	54	566	27	[illegible]	[illegible]
	Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 10 — RESPONSES	AMB. ILL. W	583	42	583	21	583	21	583	10	583	21	583	42	575	10	583	42	583	42	551	5
	W	575	54	587	61	492	15	492	15	575	54	575	54	575	27	583	54	587	40	[illegible]	33
	R-1	587	61	587	53	587	53	587	53	587	53	587	61	587	53	587	53	583	53	499	20
	R-2	575	40	612	21	566	16	[illegible]	16	612	21	612	11	566	8	612	12	[illegible]	[illegible]	499	6
	G-1	587	8	551	5	575	11	575	11	551	5	587	11	566	6	587	35	583	10	499	13
	G-2	583	21	566	8	566	8	566	8	566	8	583	21	566	8	583	62	583	12	492	11
	Y-1	587	53	587	35	575	21	583	21	587	35	575	27	612	12	583	53	587	35	[illegible]	9
	Y-2	575	40	587	35	575	27	575	12	612	18	575	27	612	18	575	40	612	31	[illegible]	12

TABLE 27

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 5

PROJ.PR. No.	AMB. ILL.	1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
11 (RESPONSES)	W	583	42	583	21	583	21	583	10	583	42	583	42	583	21	583	42	583	42	551	10
	W	595	54	612	37	455	17	455	8	595	54	612	37	612	18	595	54	612	28	492	23
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	574	20
	R-2	612	28	612	18	595	27	595	12	595	27	612	18	538	16	595	27	492	15	492	18
	G-1	587	8	551	5	595	11	499	3	551	5	587	18	574	5	583	62	583	21	574	9
	G-2	583	42	583	42	583	21	583	21	583	42	583	42	583	10	595	48	583	42	499	13
	Y-1	587	53	587	35	583	21	486	7	583	42	587	35	595	27	583	62	587	35	492	9
	Y-2	595	87	587	35	583	42	583	21	595	27	595	48	612	18	595	48	587	53	492	23
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	[redacted]	
12 (RESPONSES)	W	587	35	587	35	587	18	587	8	587	35	587	35	587	18	583	62	587	35	566	35
	W	595	27	587	35	551	10	551	10	595	27	612	18	538	16	595	54	612	28	574	9
	R-1	595	40	595	40	583	42	583	42	595	40	595	40	583	42	583	42	595	40	551	43
	R-2	595	54	612	37	551	31	551	31	612	28	595	40	566	17	566	35	595	54	574	15
	G-1	595	12	551	5	595	6	499	6	574	5	595	12	614	5	587	53	583	10	572	47
	G-2	583	28	583	62	583	42	583	21	583	42	583	62	583	21	583	42	583	62	551	43
	Y-1	595	27	587	35	566	8	566	17	595	27	587	35	583	42	595	27	612	28	574	9
	Y-2	612	28	612	18	566	17	566	35	595	27	612	28	612	18	595	40	612	28	574	15
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	[redacted]	
13 (RESPONSES)	W	587	35	587	18	583	8	587	8	587	18	587	18	587	8	587	53	587	35	566	35
	W	595	54	492	22	566	8	566	8	492	15	612	28	566	17	595	54	612	28	574	5
	R-1	595	54	595	40	595	27	595	27	595	27	595	40	595	27	595	40	595	54	551	43
	R-2	595	40	612	28	566	35	566	54	587	35	612	28	551	20	612	28	612	18	551	31
	G-1	595	12	574	5	583	10	574	2	551	20	595	12	574	9	595	40	595	12	572	47
	G-2	583	62	583	21	583	10	583	10	583	21	583	42	583	10	595	40	583	42	566	54
	Y-1	595	27	587	35	566	8	566	17	595	27	612	28	566	17	595	40	612	28	551	10
	Y-2	612	37	595	27	566	8	566	17	612	18	595	40	612	18	595	54	583	27	574	9
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	[redacted]	
14 (RESPONSES)	W	583	42	583	42	583	21	583	10	583	42	583	42	583	21	583	42	583	42	551	20
	W	612	37	587	35	566	8	566	8	595	27	595	40	566	17	612	28	612	18	551	10
	R-1	595	54	595	40	595	27	595	27	595	40	595	40	595	27	595	40	595	40	551	43
	R-2	595	27	595	40	566	35	566	35	583	42	595	27	566	17	595	40	612	18	574	9
	G-1	612	9	612	4	583	10	595	11	583	10	595	12	574	5	595	27	587	8	566	54
	G-2	583	62	583	42	583	21	583	21	583	42	583	62	583	10	595	27	583	62	566	54
	Y-1	595	40	587	35	583	42	583	21	587	35	595	27	587	35	595	40	612	28	574	9
	Y-2	595	40	612	28	612	18	612	9	595	27	595	40	612	18	595	40	612	28	574	15
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	[redacted]	
15 (RESPONSES)	W	583	62	583	62	583	42	583	21	583	42	583	42	583	21	583	42	583	42	551	31
	W	612	28	595	27	455	8	455	8	492	22	595	54	538	16	595	40	612	28	574	9
	R-1	595	40	595	40	583	42	583	42	595	40	595	40	583	42	583	42	595	54	574	20
	R-2	612	37	612	28	566	35	566	35	587	35	595	40	595	27	612	28	595	54	574	9
	G-1	583	21	583	10	595	11	595	11	587	8	583	21	566	17	595	27	583	21	572	52
	G-2	583	62	583	42	583	21	583	21	583	42	583	42	583	31	583	42	583	62	551	31
	Y-1	612	28	595	27	566	8	566	17	595	40	587	53	595	27	492	15	595	27	574	9
	Y-2	587	35	583	42	455	8	566	8	612	18	612	28	612	18	595	27	612	28	574	9

TABLE 28

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 5

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16	W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	583	62	575	11	575	30
	W	587	8	455	8	455	17	455	17	478	22	587	18	455	8	595	27	455	17	583	21
	R-1	595	54	595	40	595	27	595	27	595	40	595	54	595	27	595	40	595	54	572	17
	R-2	612	18	478	11	478	22	478	22	478	32	612	9	478	11	612	18	612	9	595	30
	G-1	583	10	551	5	583	21	595	12	574	5	583	10	583	10	587	35	612	4	583	78
	G-2	575	11	575	11	575	11	575	11	575	18	575	30	575	61	587	35	575	61	595	61
	Y-1	587	35	538c	16	492c	15	566	8	612	18	595	27	538c	16	612	37	566c	17	583	10
	Y-2	583	10	566c	17	455	17	455	17	583	10	566c	24	551	20	566c	31	566c	17	583	10
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
17	W	583	10	583	10	583	10	572	11	572	11	583	10	583	10	583	42	583	10	572	32
	W	595	12	583	21	561c	4	478	22	566c	17	561c	24	566c	17	538c	24	566c	24	566	8
	R-1	587	68	587	53	587	35	587	35	587	53	587	53	587	53	587	53	587	53	551	31
	R-2	612	11	538c	8	478	22	478	22	595	12	612	9	566	17	612	18	612	9	566	17
	G-1	492c	3	496c	4	492c	6	575	18	492c	6	595	6	583	21	583	21	551	5	583	62
	G-2	575	11	575	11	575	11	595	11	575	11	575	11	575	11	583	42	575	11	575	48
	Y-1	583	42	566c	17	481	12	481	24	566c	17	538c	24	455	17	566c	24	538c	24	566	8
	Y-2	566c	8	566c	17	478	5	455	8	566c	17	566c	24	455	8	566c	24	566c	17	566	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
18	W	583	10	583	10	583	10	583	10	583	11	583	10	583	10	583	10	583	10	570	17
	W	587	16	587	8	566c	8	566c	17	538c	16	538c	24	561c	17	566c	24	538c	24	566	8
	R-1	595	40	595	40	595	27	595	27	595	40	595	40	595	27	595	27	595	40	551	43
	R-2	587	8	595	27	612	4	612	4	595	12	612	9	566	17	551	10	612	4	566	35
	G-1	574	2	574	2	575	11	575	11	492c	3	492c	3	583	21	583	10	583	10	583	62
	G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	47
	Y-1	538c	16	566c	8	551	5	551	10	566c	17	538c	24	566c	24	538c	24	595	27	566	8
	Y-2	583	10	566c	8	478	22	455	17	566c	17	566c	24	566c	17	566c	24	566c	17	566	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
19	W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	40
	W	455	4	455	17	455	24	455	24	455	17	478	22	455	8	455	4	455	4	612	50
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	54
	R-2	587	18	583	21	478	22	478	22	478	22	455	8	583	21	587	8	587	18	492c	12
	G-1	486	7	492	9	595	6	595	6	455	8	566c	8	595	12	492c	6	486	7	595	54
	G-2	612	4	612	9	612	9	612	9	612	9	612	9	612	9	612	9	612	9	612	37
	Y-1	455	8	478	5	455	17	455	17	455	24	478	5	478	11	478	5	—		595	54
	Y-2	455	4	455	17	455	24	455	24	583	10	455	8	455	24	566c	17	—		595	54
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
20	W	595	6	595	12	595	12	595	27	595	27	595	12	595	12	595	12	595	12	595	27
	W	478	5	455	8	455	17	455	24	532c	8	455	4	455	8	492	25	481	24	612	18
	R-1	587	18	587	18	587	18	587	18	587	18	587	18	587	18	595	11	587	18	572	17
	R-2	486	13	486	6	488	12	488	12	612	4	481	24	595	40	488	23	595	12	612	18
	G-1	486	7	481	6	595	6	595	6	455	4	488	6	595	12	574	9	571	5	595	40
	G-2	612	4	612	4	612	9	612	9	612	9	612	4	612	9	612	9	612	4	612	18
	Y-1	478	5	455	4	566c	17	566c	24	455	8	478	5	566c	31	481	36	455	8	595	27
	Y-2	478	5	455	17	481	12	566c	24	566c	17	481	12	566c	24	486	37	481	6	595	27

TABLE 29

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 5

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
21	W	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6
	W	478	11	455	8	478	22	478	32	455	8	478	22	566	17	486	37	[illegible]	17	612	4
	R-1	577	53	577	53	577	53	575	30	577	53	571	53	577	53	575	11	[illegible]	53	572	11
	R-2	491	12	481	6	486	25	486	13	575	11	575	30	575	12	[illegible]	23	571	8	492	5
	G-1	491	3	492	3	575	6	577	11	577	8	574	2	573	21	489	6	493	3	577	35
	G-2	492	3	492	3	492	3	492	3	492	3	492	3	492	8	570	11	492	3	492	3
	Y-1	491	12	455	4	566	17	566	17	455	8	477	22	455	24	491	36	455	17	575	6
	Y-2	491	12	566	17	455	17	455	17	566	17	491	12	566	24	[illegible]	37	566	17	575	6
Chip		[illegible]	67	480	87	584	31	455	35	488	36	612	37	486	37	575	61	571	40	[illegible]	
22	W	572	17	572	17	572	11	572	11	572	17	572	17	572	17	572	11	572	17	566	17
	W	580	42	577	35	455	8	455	17	577	53	478	22	575	30	566	31	572	11	566	8
	R-1	577	48	577	53	577	35	577	35	577	35	577	53	577	53	566	32	577	53	486	37
	R-2	455	8	566	17	566	24	566	17	577	35	566	8	[illegible]	12	455	31	572	8	491	24
	G-1	491	3	566	17	572	17	572	11	566	17	571	11	566	36	478	32	[illegible]	12	566	24
	G-2	572	17	572	17	572	11	572	11	572	17	572	17	572	17	572	11	572	17	[illegible]	24
	Y-1	577	48	576	36	566	17	573	24	577	48	575	36	575	48	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	24
	Y-2	575	30	575	48	575	12	575	12	575	48	575	30	[illegible]	[illegible]	[illegible]	11	[illegible]	[illegible]	[illegible]	17
Chip		[illegible]	67	480	87	584	31	455	35	488	36	612	37	486	37	575	61	571	40	[illegible]	
23	W	573	10	573	10	580	10	573	11	573	10	573	11	573	10	575	11	580	[illegible]	[illegible]	5
	W	577	35	580	62	478	11	478	11	573	62	566	8	577	53	485	17	[illegible]	[illegible]	491	6
	R-1	575	54	575	40	575	37	575	37	575	40	575	40	575	40	575	40	[illegible]	37	574	30
	R-2	478	5	478	11	478	22	478	22	575	37	575	12	575	37	[illegible]	10	[illegible]	40	574	5
	G-1	574	5	581	5	580	11	580	11	573	11	581	5	573	21	580	13	[illegible]	10	[illegible]	30
	G-2	[illegible]	10	580	42	[illegible]	21	[illegible]	21	573	42	573	21	580	21	580	10	580	21	[illegible]	6
	Y-1	[illegible]	62	573	36	566	17	566	24	[illegible]	62	[illegible]	42	577	35	566	24	[illegible]	42	[illegible]	6
	Y-2	[illegible]	10	[illegible]	36	[illegible]	24	[illegible]	17	[illegible]	42	577	36	[illegible]	17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12
Chip		[illegible]	67	480	87	584	31	455	35	488	36	612	37	486	37	575	61	571	40	[illegible]	
24	W	573	21	573	21	573	10	573	10	573	21	573	21	573	42	573	10	580	42	566	35
	W	577	36	575	37	580	8	566	17	575	37	612	11	485	37	566	17	575	37	492	2
	R-1	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	[illegible]	53	581	43
	R-2	575	40	[illegible]	36	551	30	551	30	577	53	575	37	575	37	566	37	[illegible]	[illegible]	581	8
	G-1	491	3	[illegible]	10	575	11	575	11	581	10	581	10	577	11	581	8	[illegible]	21	[illegible]	32
	G-2	[illegible]	21	[illegible]	42	573	21	[illegible]	10	573	42	[illegible]	21	573	21	[illegible]	6	[illegible]	[illegible]	[illegible]	17
	Y-1	[illegible]	62	[illegible]	36	566	17	[illegible]	21	[illegible]	62	[illegible]	42	[illegible]	24	478	5	[illegible]	[illegible]	486	8
	Y-2	573	21	574	10	478	8	[illegible]	[illegible]	[illegible]	17	[illegible]	6	[illegible]	[illegible]	[illegible]	35	[illegible]	24	492	18
Chip		[illegible]	67	480	87	584	31	455	35	488	36	612	37	486	37	575	61	571	40	[illegible]	
25	W	573	21	573	21	573	10	572	11	572	11	570	11	572	11	570	17	573	21	572	17
	W	577	11	[illegible]	16	478	8	485	8	577	11	575	12	577	11	486	8	581	16	486	8
	R-1	575	40	580	40	580	40	575	37	575	40	575	40	575	40	575	37	[illegible]	[illegible]	581	31
	R-2	612	36	580	40	566	17	566	17	575	37	575	12	575	6	577	11	577	8	581	16
	G-1	577	8	577	8	573	10	575	11	566	8	575	12	[illegible]	21	575	11	574	1	573	42
	G-2	570	11	570	11	570	11	572	11	570	1	570	11	[illegible]	11	[illegible]	11	572	1	570	32
	Y-1	[illegible]	42	[illegible]	21	478	5	478	5	573	42	577	35	580	42	[illegible]	62	577	35	[illegible]	6
	Y-2	[illegible]	21	573	10	455	8	455	8	455	4	580	42	566	17	478	11	566	17	580	5

TABLE 30

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 5

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
26	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	62	583	10	492c	5
	W	595	9	455	17	478	11	478	11	481	12	561c	17	481	24	612	28	455	8	612	9
	R-1	587	53	581	53	587	53	587	53	587	53	587	53	584	53	587	53	587	53	570	17
	R-2	492c	19	492c	6	478	11	478	11	455	4	492c	6	551	10	595	27	595	12	574	2
	G-1	492c	3	492	9	583	10	583	10	478	11	561c	10	551	5	587	35	551	10	595	45
	G-2	595	6	595	6	595	6	595	6	595	6	595	6	595	6	587	35	595	6	595	27
	Y-1	583	21	538c	16	478	11	481	24	583	42	583	62	478	11	587	53	455	17	595	6
	Y-2	583	21	455	8	566c	16	486	25	486	13	566c	16	486	25	566c	31	486	7	595	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
27	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	42	583	10	538c	4
	W	587	18	455	8	455	17	455	17	566c	17	566c	8	478	5	612	18	566c	8	595	6
	R-1	595	40	595	40	595	27	595	27	595	27	595	40	595	27	595	40	595	40	566	35
	R-2	595	27	612	9	478	22	478	22	455	17	478	8	478	5	595	12	595	6	488	6
	G-1	455	4	492c	6	587	8	595	11	595	6	583	10	583	10	583	21	551	5	587	35
	G-2	492c	4	492c	4	492c	4	492c	4	492c	4	492c	4	492c	4	583	42	492c	4	492c	5
	Y-1	583	42	566c	8	481	12	481	24	583	42	587	35	566c	24	538c	24	583	42	587	8
	Y-2	583	31	478	5	566c	8	481	24	566c	8	566c	16	488	6	566c	31	455	24	595	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	[illegible]	[illegible]	[illegible]	566	31	455	33	[illegible]	[illegible]	612	37	486	37	575	61	551	40	White	
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	[illegible]	61	551	[illegible]	White	
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				

TABLE 71

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	575	46	575	30	575	30	575	30	575	30	[illegible]	48	575	18	575	18	575	30	455	24
	W	587	68	538c	16	[illegible]	[illegible]	[illegible]	26	493c	19	575	61	498c	22	575	30	575	48	455	24
	R-1	575	61	575	30	575	61	575	61	575	18	575	30	575	18	575	30	575	48	481	36
	R-2	587	35	575	12	587	18	587	18	455	17	587	35	575	12	575	30	572	32	478	32
	G-1	572	32	575	11	572	17	572	11	572	11	572	32	575	11	575	11	572	32	478	22
	G-2	575	48	575	30	575	48	575	30	575	18	575	48	575	30	575	30	575	48	455	31
	Y-1	575	61	575	42	561c	24	575	61	561c	24	575	61	561c	24	572	47	575	61	561c	17
	Y-2	575	61	575	30	575	48	575	48	575	30	575	61	575	48	575	30	575	61	455	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
2	W	575	30	575	18	575	18	575	18	575	18	575	30	575	18	575	18	575	18	455	17
	W	587	53	493c	12	575	27	496c	22	496c	22	575	40	538c	16	572	47	538c	16	486	25
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	572	32	587	53	486	25
	R-2	583	42	575	12	587	35	587	18	455	17	583	42	478	22	575	30	575	18	478	32
	G-1	572	32	572	11	572	17	572	11	572	11	572	32	566	4	575	11	572	32	478	22
	G-2	575	48	575	30	575	48	575	30	575	30	575	48	575	18	575	18	575	48	455	31
	Y-1	575	61	566	24	575	48	566	24	575	61	566	24	575	61	566	31	572	47	455	17
	Y-2	575	61	575	30	575	48	575	30	566	24	575	61	566	24	575	30	575	61	455	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
3	W	572	17	572	11	572	17	572	17	572	17	572	17	572	17	572	17	572	17	455	24
	W	587	35	583	21	587	18	587	18	566	16	575	30	493c	12	575	48	575	61	538	24
	R-1	587	53	612	18	587	53	612	18	612	18	587	53	612	18	575	48	612	28	455	31
	R-2	583	21	575	30	583	10	583	10	455	17	575	30	455	17	575	30	572	47	566	24
	G-1	566	17	575	11	566	8	551	5	514	5	566	35	551	5	572	17	566	17	538	24
	G-2	572	17	572	17	572	32	572	32	572	17	572	32	572	17	572	17	572	32	566	31
	Y-1	575	61	566	24	575	48	566	24	566	24	575	61	566	24	572	32	575	48	566	17
	Y-2	575	61	575	30	575	48	575	30	575	30	575	61	575	30	575	30	575	48	566	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
4	W	572	32	572	17	572	17	572	17	572	17	572	32	572	17	572	17	572	17	566	24
	W	575	40	566	8	455	8	455	17	455	8	575	48	455	8	575	37	566	25	538	[illegible]
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	575	40	[illegible]	40	538	32
	R-2	575	54	587	35	583	42	478	11	455	4	575	12	538	8	566	16	538	16	538	24
	G-1	566	35	514	2	551	20	514	5	499	6	551	20	499	6	572	17	566	17	492	22
	G-2	572	47	572	32	572	32	572	32	572	17	572	32	572	32	572	32	572	32	566	31
	Y-1	575	61	575	30	575	48	575	30	575	30	575	61	575	48	575	48	575	61	566	31
	Y-2	575	61	575	61	575	61	575	48	575	30	575	61	575	30	575	48	575	61	566	31
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
5	W	572	47	572	17	572	32	572	32	572	17	572	32	572	17	572	17	572	17	566	24
	W	575	61	572	60	572	47	572	47	572	32	575	30	575	37	612	18	575	37	538	32
	R-1	575	61	575	48	575	48	575	48	575	30	575	48	575	30	575	30	575	30	538	32
	R-2	587	68	575	12	583	42	587	21	575	18	572	47	575	12	587	18	583	42	566	32
	G-1	566	35	572	11	572	17	572	17	572	11	572	17	566	17	572	17	572	17	566	24
	G-2	572	47	572	17	572	32	572	32	572	17	572	47	572	17	572	17	572	32	561c	31
	Y-1	575	61	575	30	575	48	575	48	575	30	575	61	575	30	575	48	575	61	566	31
	Y-2	575	61	575	48	575	61	575	48	575	30	575	61	575	48	575	48	575	61	566	31

TABLE 32

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	572	47	572	32	572	17	572	17	572	17	572	47	572	17	572	17	572	32	566	24
	W	575	48	566	17	575	30	575	30	566	8	575	48	566	17	612	28	575	30	538	24
	R-1	575	61	587	53	575	61	575	61	587	53	575	61	587	53	575	30	575	61	455	31
	R-2	583	62	455	17	455	8	455	8	455	17	583	21	566	8	575	30	583	42	566	17
	G-1	566	17	572	17	566	8	551	10	574	2	566	35	574	5	572	17	566	17	566	24
	G-2	572	47	572	17	572	32	572	32	572	17	572	47	572	17	572	17	572	47	455	31
	Y-1	575	61	575	30	575	48	575	48	575	30	575	61	575	30	575	48	575	61	566	31
	Y-2	575	61	575	30	575	48	575	48	575	30	575	61	575	30	575	48	575	61	566	31
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
7	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	583	42	583	42	551	31
	W	583	42	587	35	595	27	587	35	583	62	595	40	612	15	583	42	587	53	492	18
	R-1	587	68	587	53	587	53	587	53	587	53	587	68	587	53	587	53	587	53	574	20
	R-2	595	12	566	35	566	17	566	87	551	20	595	40	583	42	575	30	583	21	574	9
	G-1	587	18	583	10	583	21	583	10	572	11	612	18	583	10	575	11	612	18	574	15
	G-2	587	53	587	35	587	35	587	35	587	35	587	53	587	35	587	35	587	35	551	31
	Y-1	583	62	583	21	587	35	583	42	583	21	595	40	583	42	583	21	595	40	492	18
	Y-2	595	27	583	21	587	35	587	35	583	21	595	40	595	27	595	27	595	40	492	20
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
8	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	31	583	21	551	20
	W	595	27	583	42	587	35	566	16	551	5	595	40	566	8	587	35	587	53	499	6
	R-1	595	54	595	40	595	54	595	40	595	40	595	54	595	40	595	40	595	40	551	31
	R-2	595	27	595	30	583	21	583	21	551	10	595	27	492	9	492	18	492	3	499	13
	G-1	587	8	595	6	587	8	612	4	574	5	583	10	574	5	595	11	583	10	551	20
	G-2	583	42	583	21	583	42	583	21	583	31	583	42	583	21	583	21	583	42	574	9
	Y-1	595	40	583	42	595	27	587	35	583	42	595	40	583	42	587	37	595	27	492	12
	Y-2	595	27	587	35	595	27	595	12	587	11	595	27	566	17	595	27	595	27	499	13
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
9	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	551	10
	W	595	27	583	21	587	35	583	21	455	8	595	40	481	12	595	27	612	18	492	6
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	53	551	31
	R-2	595	27	595	30	583	42	583	42	551	10	583	42	566	17	587	35	587	18	574	5
	G-1	574	2	499	6	574	2	574	5	574	5	587	8	499	6	587	11	583	21	574	9
	G-2	566	17	566	8	566	8	566	8	566	8	566	17	566	8	566	8	566	8	551	10
	Y-1	587	35	587	18	583	42	583	21	583	21	587	35	583	21	583	42	587	35	492	6
	Y-2	612	18	455	8	595	27	595	12	551	5	612	18	551	5	595	27	595	27	492	9
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
10	W	583	42	583	21	583	21	583	21	583	21	583	42	583	21	583	21	583	42	551	10
	W	595	40	583	21	587	35	587	18	583	21	595	27	587	35	587	35	595	27	492	12
	R-1	587	68	587	53	587	53	587	53	587	53	587	68	587	53	587	53	587	53	492	20
	R-2	612	28	499	6	595	27	612	18	551	10	595	40	583	42	587	35	587	8	492	9
	G-1	595	6	492	3	583	10	551	5	574	5	587	11	612	10	583	21	587	11	574	9
	G-2	583	62	583	21	583	21	583	21	583	21	583	42	583	21	583	21	583	21	492	9
	Y-1	595	27	583	42	587	35	492	15	583	42	587	35	583	42	595	27	587	35	492	12
	Y-2	595	27	612	18	587	35	612	9	595	12	595	27	612	9	595	12	595	27	492	23

TABLE 73

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21	551	20
RESPONSES	W	595	21	612	18	595	21	587	21	551	5	595	40	536	16	583	42	595	21	488	23
	R-1	587	68	587	53	587	53	587	53	587	53	587	60	587	53	587	53	587	53	499	27
	R-2	595	27	566	17	595	12	595	27	551	10	595	27	583	42	595	30	583	21	574	5
	G-1	587	8	574	5	583	10	557	10	574	5	587	18	551	10	595	12	595	6	574	9
	G-2	583	62	583	10	583	42	583	21	583	21	583	42	583	21	583	21	583	42	574	9
	Y-1	587	35	583	42	595	27	595	27	583	42	587	35	583	42	587	18	587	35	488	23
	Y-2	595	27	583	42	587	35	587	35	595	27	612	18	536	16	595	27	612	18	488	23
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
12	W	583	62	583	21	583	42	583	21	583	21	583	62	583	21	583	21	583	42	566	54
RESPONSES	W	612	28	566	17	595	21	595	27	566	8	612	28	566	17	536	34	536	34	574	5
	R-1	595	54	595	40	595	40	595	40	595	40	595	51	595	40	595	40	595	40	551	43
	R-2	595	54	595	48	595	40	583	42	583	62	587	53	551	10	583	42	595	29	574	15
	G-1	587	8	595	6	595	12	566	8	551	10	587	8	566	8	583	21	583	10	566	54
	G-2	587	53	587	18	587	35	587	35	587	11	587	35	587	18	587	35	587	35	566	54
	Y-1	595	40	583	62	587	35	587	35	583	42	612	28	583	42	587	35	595	27	499	13
	Y-2	595	27	583	42	587	35	587	35	583	42	612	28	583	42	583	21	612	28	574	15
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13	W	583	42	583	21	583	21	583	21	583	21	583	42	583	21	[illegible]	21	583	42	566	35
RESPONSES	W	595	21	536	16	536	24	536	16	[illegible]	[illegible]	612	18	[illegible]	[illegible]	612	18	612	21	574	2
	R-1	595	54	595	40	595	40	595	40	[illegible]	40	595	54	595	40	595	40	595	40	551	43
	R-2	595	27	583	42	595	12	566	17	583	42	595	27	536	8	536	16	595	27	551	31
	G-1	587	8	595	12	595	6	566	8	551	10	583	10	566	17	595	12	587	18	572	32
	G-2	583	62	583	21	583	42	583	42	583	21	583	42	583	21	583	42	583	42	566	35
	Y-1	[illegible]	27	583	42	587	35	612	18	583	42	612	28	595	27	587	35	[illegible]	28	574	5
	Y-2	595	27	583	42	587	35	587	35	488	15	612	28	488	15	595	27	612	28	574	9
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14	W	583	62	583	42	[illegible]	42	583	21	583	21	583	42	583	21	583	21	583	42	551	20
RESPONSES	W	612	28	583	42	587	35	536	16	566	8	612	28	536	16	595	27	612	18	574	5
	R-1	492	26	492	19	492	19	492	19	492	19	492	26	492	19	492	19	492	19	551	43
	R-2	595	54	583	42	595	40	583	42	587	35	612	18	488	15	595	40	595	54	574	9
	G-1	595	12	595	11	587	18	595	11	499	3	587	18	551	10	612	18	595	12	566	54
	G-2	583	62	583	21	583	42	583	21	583	21	583	42	583	21	583	21	583	42	551	31
	Y-1	[illegible]	41	587	35	595	27	587	35	583	42	595	37	583	42	587	35	612	18	499	6
	Y-2	595	40	566	8	595	40	612	18	566	8	612	28	566	8	595	27	612	28	499	20
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15	W	583	42	583	21	583	42	583	42	583	21	583	42	583	21	583	21	583	21	551	20
RESPONSES	W	612	28	583	42	612	18	536	16	536	16	[illegible]	28	566	17	536	16	595	40	574	9
	R-1	595	54	595	40	595	40	595	40	595	40	595	51	595	40	595	40	595	40	551	43
	R-2	595	27	583	62	612	28	583	42	595	30	595	40	488	15	583	21	595	27	574	15
	G-1	583	10	595	12	595	6	566	8	595	12	595	12	551	10	587	18	583	12	566	54
	G-2	587	53	587	18	587	35	587	18	557	18	587	53	587	18	587	18	587	35	551	43
	Y-1	595	41	587	35	587	53	612	18	587	35	595	40	583	42	587	35	595	27	574	9
	Y-2	612	28	566	8	612	28	612	18	566	8	612	28	612	18	595	27	612	28	574	15

TABLE 34

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

PROJ.PR. No.	AMB. ILL. / RESPONSES	1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
16	W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	30
	W	573	21	455	8	573	21	455	8	455	8	573	10	455	8	566	17	458	8	573	10
	R-1	587	68	587	53	587	68	587	53	587	53	587	68	587	53	587	53	587	53	572	32
	R-2	575	12	478	22	478	11	478	22	478	22	587	18	566	8	551	5	575	12	572	32
	G-1	575	6	575	12	575	6	612	4	575	12	481	6	587	18	573	42	551	5	573	78
	G-2	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	48
	Y-1	575	27	455	8	566	17	566	24	478	11	566	24	455	24	566	24	566	31	573	10
	Y-2	566	8	455	17	582	16	478	11	573	10	566	17	481	12	566	24	566	31	573	10
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	[redacted]	
17	W	572	11	573	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	W	566	8	566	17	455	8	455	17	481	12	566	8	566	17	582	16	582	16	573	10
	R-1	575	40	575	27	575	27	575	27	575	27	575	40	575	27	575	27	575	27	572	32
	R-2	575	12	478	22	575	6	478	22	478	22	575	6	551	5	566	17	[illegible]	12	566	35
	G-1	582	4	573	21	481	6	444	3	573	21	482	7	573	10	587	18	[illegible]	5	573	62
	G-2	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	30
	Y-1	575	27	582	16	566	17	566	17	[illegible]	5	566	24	582	24	566	24	566	31	566	8
	Y-2	573	10	455	8	566	17	455	17	478	11	566	24	455	4	566	17	566	24	566	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	[redacted]	
18	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	W	566	17	455	8	566	24	566	24	455	17	566	24	566	24	455	17	566	24	566	8
	R-1	587	68	587	53	587	68	587	53	587	53	587	68	587	53	587	53	[illegible]	53	551	43
	R-2	575	27	566	17	551	5	566	8	566	35	612	9	566	8	551	5	[illegible]	12	551	20
	G-1	478	5	575	11	587	8	587	8	572	17	[illegible]	2	573	21	575	11	566	8	573	62
	G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	47
	Y-1	575	18	566	24	575	27	566	17	582	16	566	17	566	24	582	24	566	24	566	8
	Y-2	573	21	455	17	566	17	455	17	566	17	566	24	566	17	455	12	566	24	566	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	[redacted]	
19	W	575	6	575	12	575	12	575	12	575	12	575	6	575	12	575	12	575	12	575	40
	W	455	8	566	17	455	4	455	17	478	5	455	4	455	8	455	17	455	4	612	28
	R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	[illegible]	27	575	54
	R-2	587	11	478	11	478	5	478	11	478	11	478	5	478	5	566	8	478	5	[illegible]	17
	G-1	482	7	575	11	480	3	587	8	575	12	481	6	572	11	572	17	551	5	[illegible]	57
	G-2	492	3	492	6	492	3	492	6	492	6	492	3	492	6	492	6	492	3	492	26
	Y-1	—		455	17	566	8	566	24	566	24	—		566	24	566	17	566	8	575	54
	Y-2	—		566	17	478	8	478	8	566	17	478	5	478	17	566	24	—		[illegible]	54
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	[redacted]	
20	W	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	27
	W	478	11	455	8	478	5	478	22	455	17	478	5	566	17	486	7	481	6	575	27
	R-1	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	572	32
	R-2	575	4	566	4	587	8	587	8	551	10	566	8	587	18	575	6	587	8	[illegible]	5
	G-1	481	7	575	12	481	2	566	17	575	12	481	12	573	11	587	11	551	5	575	40
	G-2	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	54
	Y-1	—		478	22	455	12	566	24	566	24	—		566	31	[illegible]	35	[illegible]	17	575	27
	Y-2	478	5	566	17	455	8	478	8	566	17	478	5	566	24	[illegible]	36	478	5	575	27

TABLE 35

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
21	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	W	455	4	455	17	455	24	455	24	478	11	455	4	566	17	478	5	455	4	575	6
	R-1	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	572	17
	R-2	575	6	455	4	612	4	612	4	566	4	612	4	587	18	587	8	587	8	575	4
	G-1	574	2	573	10	573	10	551	5	575	11	551	5	575	6	575	11	553	10	587	35
	G-2	486	4	486	4	486	4	486	4	486	4	486	4	486	4	486	4	486	4	486	5
	Y-1	566	8	481	12	566	8	566	12	481	23	—		566	17	481	12	566	17	575	8
	Y-2	478	5	481	24	566	8	566	17	481	24	478	5	566	8	481	24	478	5	612	4
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	531	40	[illegible]	
22	W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	11	566	8
	W	573	42	575	18	573	42	573	62	575	30	573	42	575	18	566	24	575	11	566	8
	R-1	587	53	587	35	587	53	587	35	587	35	587	53	587	35	587	35	587	35	[illegible]	25
	R-2	566	4	478	11	455	4	455	4	481	12	587	8	573	21	478	22	455	4	[illegible]	25
	G-1	574	2	572	11	566	17	566	8	572	11	566	17	566	17	566	8	566	8	572	24
	G-2	572	17	572	11	572	37	572	17	572	11	572	32	572	17	572	17	572	17	566	24
	Y-1	575	61	575	30	575	41	575	48	575	30	592	18	575	48	566	24	575	8	566	17
	Y-2	575	48	575	30	575	48	575	36	575	36	575	36	575	36	566	24	575	48	566	17
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	531	40	[illegible]	
23	W	531	5	531	5	531	5	531	5	531	5	531	5	531	5	531	5	531	5	531	20
	W	573	42	573	21	587	35	587	35	573	21	573	42	587	35	455	17	587	35	492	3
	R-1	575	54	575	40	575	54	575	40	575	40	575	54	575	40	575	40	575	40	574	15
	R-2	455	4	478	11	478	5	531	5	566	17	587	18	566	8	531	11	553	10	492	9
	G-1	587	8	587	11	566	8	566	8	572	11	566	8	573	10	551	11	553	5	551	20
	G-2	499	3	499	3	499	3	499	3	499	3	499	3	499	3	499	3	499	3	499	6
	Y-1	587	35	573	42	587	35	587	35	573	42	573	62	573	42	566	24	587	35	492	6
	Y-2	587	35	486	13	573	42	587	35	486	13	573	24	566	24	492	7	566	24	492	6
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	531	40	[illegible]	
24	W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	566	35
	W	587	35	566	8	587	35	587	35	573	42	573	62	587	35	455	8	573	42	499	6
	R-1	575	54	575	40	575	40	575	40	575	40	575	54	575	40	575	40	575	40	551	31
	R-2	575	27	573	42	575	27	587	35	566	17	575	12	478	5	566	17	587	35	574	5
	G-1	566	8	573	10	587	8	551	5	575	11	551	5	575	6	551	5	566	8	566	35
	G-2	573	42	573	21	573	42	573	21	573	21	573	42	573	21	573	21	573	21	566	35
	Y-1	575	27	573	42	587	35	612	18	573	42	575	27	566	24	573	42	587	35	492	3
	Y-2	587	35	455	17	566	17	566	24	455	17	566	17	[illegible]	16	455	17	566	17	486	3
	Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	531	40	[illegible]	
26	W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	572	17
	W	587	18	592	16	573	21	573	21	592	16	587	18	566	8	566	11	587	18	551	5
	R-1	575	54	587	46	575	40	575	40	575	40	575	54	575	40	575	40	575	40	566	54
	R-2	575	12	566	17	566	8	551	5	566	17	575	27	566	8	566	17	575	27	551	10
	G-1	574	2	572	17	551	5	575	5	572	17	551	10	566	21	575	18	551	5	587	35
	G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	Y-1	587	35	592	16	573	40	575	27	592	16	573	42	592	24	573	42	587	35	492	3
	Y-2	592	16	455	17	566	17	566	24	455	17	592	24	566	16	455	8	592	24	551	5

TABLE 36

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 6

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
26 (RESPONSES)	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	21
	W	583	10	455	17	455	8	455	17	455	24	583	10	455	8	536	16	455	8	575	6
	R-1	587	53	583	42	587	35	583	42	583	42	587	53	583	42	583	42	583	42	566	35
	R-2	575	40	551	10	551	5	566	8	551	10	575	12	566	8	575	27	612	18	566	8
	G-1	498	4	572	17	551	10	498	3	612	9	498	3	575	12	575	18	498	6	587	35
	G-2	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	3	492	6
	Y-1	587	35	478	11	583	42	583	[illegible]	481	24	587	35	481	24	583	21	583	42	587	8
	Y-2	566	8	481	24	455	8	455	8	481	24	566	17	455	17	566	24	455	17	612	4
Chip		587	67	499	27	561c	31	455	33	498	36	612	37	486	37	575	61	551	40	WHITE	
27 (RESPONSES)	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11
	W	566	8	574	2	566	8	455	4	455	17	583	21	566	8	566	17	455	8	612	4
	R-1	587	53	587	35	587	35	587	35	587	35	587	53	587	35	579	35	587	35	566	35
	R-2	575	12	478	11	478	5	478	11	478	11	612	4	551	5	566	8	612	9	551	5
	G-1	498	3	583	10	583	10	551	10	575	18	551	5	583	10	612	9	566	8	583	42
	G-2	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	Y-1	583	42	566	17	566	24	566	24	583	24	575	42	566	24	566	31	575	42	575	6
	Y-2	566	17	455	8	455	12	455	17	481	24	566	17	481	24	566	24	566	17	486	7
Chip		587	67	499	27	561c	31	455	33	498	36	612	37	486	37	575	61	551	40	WHITE	
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	566	31	455	33	498	36	612	37	486	37	575	61	551	40	White	
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	566	31	455	33	498	36	612	37	486	37	575	61	551	40	White	
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				

TABLE 37

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	572	47	572	32	572	47	572	32	575	30	572	47	575	30	572	32	572	47	481	36
	W	575	61	538c	24	572	47	595	40	538c	24	572	60	538c	24	572	32	538c	16	455	24
	R-1	575	61	583	62	575	61	575	61	583	62	575	61	583	62	575	30	583	62	478	22
	R-2	583	42	595	27	583	21	583	21	538c	8	583	42	455	17	575	30	595	27	478	22
	G-1	572	32	498	3	572	17	572	11	455	8	572	32	481	12	572	11	572	17	478	22
	G-2	575	30	583	42	575	30	575	30	583	42	575	30	583	42	575	18	575	30	455	31
	Y-1	575	61	538c	24	575	30	538c	24	538c	32	575	48	538c	24	575	30	575	48	455	17
	Y-2	575	48	538c	24	538c	24	538c	24	538c	16	575	48	538c	16	572	47	575	61	455	24
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
2	W	575	30	575	30	575	30	575	18	575	30	575	48	575	30	572	32	575	30	478	32
	W	575	48	538c	24	572	47	538c	24	538c	24	572	47	538c	24	572	32	595	40	455	17
	R-1	575	61	587	53	575	61	587	53	587	53	575	61	587	53	575	30	575	61	478	22
	R-2	583	42	566c	17	595	12	566c	17	566c	17	572	47	566c	24	575	48	575	27	481	24
	G-1	572	32	566c	8	575	30	566c	8	538c	8	575	30	595	6	572	17	575	18	478	22
	G-2	575	48	583	42	575	30	575	30	583	42	575	30	583	40	575	30	583	42	566c	17
	Y-1	575	61	538c	24	575	48	538c	24	538c	32	575	48	538c	32	572	60	538c	32	455	17
	Y-2	575	48	538c	24	575	30	538c	16	538c	24	575	61	575	48	572	32	575	48	455	24
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
3	W	572	47	572	17	572	32	572	17	572	17	572	32	572	17	572	32	572	17	566c	24
	W	575	48	455	17	575	30	575	30	455	24	575	48	566c	17	572	47	575	30	566c	17
	R-1	575	61	612	28	575	61	575	61	612	28	575	61	612	28	575	30	575	61	478	32
	R-2	572	32	566c	17	566c	8	566c	17	566c	24	575	30	566c	17	572	32	583	21	566c	24
	G-1	566	35	486	13	566	17	574	5	486	13	566	35	492	9	572	32	566	17	538c	24
	G-2	575	30	575	18	575	30	575	18	575	18	575	30	575	18	575	18	575	30	538c	24
	Y-1	575	61	566c	24	575	48	575	30	566c	24	575	48	566c	24	572	47	575	61	566c	24
	Y-2	575	48	575	18	575	48	575	18	455	24	575	48	566c	17	572	47	575	18	566c	24
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
4	W	572	47	572	32	572	47	572	32	572	17	572	32	572	17	572	32	572	17	566c	24
	W	575	54	455	17	572	32	572	32	455	17	572	47	455	17	575	27	455	8	538c	24
	R-1	583	62	583	62	583	62	583	62	583	62	583	62	583	62	583	62	583	62	498c	22
	R-2	595	40	566c	17	595	27	575	12	566c	17	595	27	478	5	575	12	575	6	538c	32
	G-1	566	17	499	6	566	17	574	5	499	6	566	35	492	9	575	30	551	10	498c	22
	G-2	575	30	498c	15	575	30	575	30	498c	15	575	30	498c	15	575	18	575	30	498c	22
	Y-1	575	61	575	30	575	48	575	30	455	17	575	61	575	30	575	61	575	48	566c	31
	Y-2	575	61	575	30	575	48	575	48	455	17	575	61	455	17	575	40	575	30	566c	31
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
5	W	572	47	572	32	572	32	572	32	572	32	572	47	572	32	572	32	572	32	566c	24
	W	575	60	572	30	595	48	572	32	566c	8	595	48	538c	16	595	40	575	40	498c	32
	R-1	575	48	575	48	575	48	575	48	575	48	575	48	575	48	575	48	575	48	538c	24
	R-2	583	78	583	42	587	18	587	35	478	5	587	35	498c	12	595	27	587	53	538c	32
	G-1	575	30	551	10	578	17	566	8	574	5	575	30	574	2	575	18	566c	17	538c	24
	G-2	572	47	572	32	572	47	572	32	572	17	572	47	572	17	572	32	572	47	455	31
	Y-1	575	61	575	30	575	48	575	48	575	30	575	61	575	30	575	57	575	30	538c	31
	Y-2	575	61	575	30	575	48	575	30	575	30	575	61	575	30	575	48	575	61	566c	31

TABLE 38

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

Proj. Pr. No.	Amb. Ill.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	572	47	572	32	572	32	572	32	572	17	572	32	572	17	572	32	572	17	566	17
	W	575	61	498	15	575	48	575	48	538	16	575	47	566	17	572	32	575	48	566	24
	R-1	575	61	587	53	575	61	587	53	587	53	575	61	587	53	575	30	587	53	566	24
	R-2	575	48	538	8	583	21	587	18	566	17	583	42	455	17	572	32	583	42	566	24
	G-1	566	17	574	5	566	17	551	10	499	6	566	35	499	3	572	17	566	17	566	24
	G-2	572	47	572	17	572	32	572	[illegible]	572	11	572	47	572	11	572	17	572	32	492	19
	Y-1	575	61	566	24	575	48	575	48	538	24	575	61	575	30	572	47	575	48	566	31
	Y-2	575	48	455	17	575	48	575	30	566	17	575	61	566	17	572	47	575	30	566	24
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
7	W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	18	587	35	574	9
	W	595	40	612	18	595	40	595	27	612	18	595	40	595	27	583	42	583	62	492	27
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	551	43
	R-2	481	6	481	24	481	12	481	24	551	20	595	27	498	15	572	32	498	22	574	5
	G-1	595	12	587	8	595	12	583	10	583	10	595	27	583	21	575	18	595	12	551	31
	G-2	583	42	583	42	583	42	583	42	583	42	583	42	583	42	583	42	583	42	551	43
	Y-1	587	53	595	40	587	65	587	53	583	62	587	53	587	35	583	42	595	27	499	13
	Y-2	595	27	587	35	595	27	595	27	612	18	595	27	612	18	492	3	595	27	492	27
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
8	W	587	35	587	18	587	35	587	35	587	17	587	35	587	17	587	35	587	17	551	20
	W	595	40	612	18	595	40	595	27	566	8	595	27	536	16	595	57	595	27	492	18
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	551	31
	R-2	587	35	566	17	595	27	566	17	551	10	595	40	498	15	575	18	492	12	499	13
	G-1	587	18	551	10	583	10	551	10	551	10	587	18	551	10	575	30	575	12	566	54
	G-2	583	62	583	21	583	42	583	42	583	21	583	42	583	21	575	30	583	42	574	9
	Y-1	587	53	583	62	583	42	587	35	583	42	595	27	587	35	583	42	587	35	492	18
	Y-2	595	27	583	42	587	35	587	35	595	27	595	40	612	18	595	40	612	28	492	18
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
9	W	583	21	566	8	566	8	566	8	566	8	583	21	566	7	583	42	583	21	499	6
	W	595	40	566	8	538	16	538	16	486	13	595	40	486	13	595	54	612	18	498	12
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	566	54
	R-2	595	54	478	11	478	5	478	11	478	22	595	54	478	11	595	27	595	12	492	9
	G-1	587	8	551	20	587	8	551	20	574	9	583	10	574	9	583	42	574	5	551	20
	G-2	583	42	566	35	566	35	566	35	566	54	566	17	566	54	583	42	566	17	492	9
	Y-1	587	53	566	8	595	27	583	40	566	8	587	53	551	5	587	35	583	42	498	6
	Y-2	595	27	551	5	587	35	587	5	551	5	587	35	551	5	595	27	612	18	498	12
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
10	W	583	21	583	10	583	21	583	21	583	10	583	21	583	10	583	21	583	21	499	6
	W	595	40	583	42	587	35	587	35	583	21	612	18	612	18	498	12	595	27	498	23
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	551	20
	R-2	595	40	595	30	612	18	587	17	595	18	595	27	478	5	595	18	595	40	488	12
	G-1	583	10	499	6	583	10	551	5	499	6	587	18	574	5	587	35	587	8	551	20
	G-2	583	62	572	11	572	11	583	21	572	11	572	42	572	11	583	42	583	42	498	23
	Y-1	595	40	583	42	595	27	595	27	583	21	587	53	583	42	595	27	587	53	498	6
	Y-2	595	27	583	42	587	35	583	42	583	21	595	40	612	11	595	27	595	27	498	23

TABLE 39

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

RESPONSES

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	587	18	587	8	587	18	587	8	587	8	587	18	587	8	587	8	587	8	499	6
	W	595	54	566	17	595	27	595	12	566	17	595	40	582	16	595	54	595	40	492	9
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	574	15
	R-2	612	28	566	17	595	27	551	5	566	35	595	40	566	8	566	17	595	40	492	9
	G-1	583	10	574	5	587	8	574	2	574	5	587	18	551	10	587	18	587	8	551	20
	G-2	583	62	583	21	583	42	583	21	583	21	583	42	583	21	583	42	583	62	574	9
	Y-1	595	40	583	62	587	35	595	27	612	18	595	40	612	18	583	42	587	53	492	12
	Y-2	595	27	583	42	587	35	587	35	583	42	583	42	612	18	595	40	612	28	499	13
Chip		587	67	499	27	5610	31	495	33	492	36	612	37	486	57	575	61	551	40	[illegible]	
12	W	587	53	587	18	587	35	587	35	587	35	587	53	587	35	583	62	587	35	566	54
	W	595	54	612	18	595	54	595	40	612	9	595	40	612	18	595	54	595	40	574	9
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	551	43
	R-2	595	27	587	35	595	27	587	18	566	35	595	54	582	16	566	17	582	54	499	20
	G-1	595	12	551	10	595	12	551	10	574	5	595	12	551	10	595	30	583	21	582	47
	G-2	583	28	583	21	583	42	583	42	583	21	583	62	583	21	583	42	583	62	551	43
	Y-1	595	54	587	53	595	40	595	27	566	8	595	54	612	18	587	35	[illegible]	[illegible]	574	9
	Y-2	595	27	583	42	587	35	612	18	582	16	612	28	582	16	587	53	612	18	574	9
Chip		587	67	499	27	5610	31	495	33	492	36	612	37	486	57	575	61	551	40	[illegible]	
13	W	583	42	583	11	583	42	583	42	566	8	583	42	566	8	583	62	583	21	566	35
	W	595	54	492	15	612	28	612	18	551	10	612	28	551	5	595	54	612	28	574	5
	R-1	595	54	595	40	595	54	595	40	595	40	595	54	595	40	595	40	595	40	551	31
	R-2	595	54	566	17	595	40	566	17	566	17	595	54	566	17	595	27	595	40	574	9
	G-1	587	18	574	9	583	10	574	5	574	9	583	21	574	9	587	53	583	10	582	47
	G-2	587	53	587	8	587	35	587	35	587	8	587	35	587	8	587	35	587	18	566	54
	Y-1	595	54	566	8	612	28	612	18	566	8	612	28	566	8	595	40	612	28	574	9
	Y-2	612	28	583	21	612	28	595	27	492	3	612	28	492	3	595	27	612	18	574	9
Chip		587	67	499	27	5610	31	495	33	492	36	612	37	486	57	575	61	551	40	[illegible]	
14	W	583	62	583	42	583	62	583	42	583	21	583	62	583	21	583	62	583	42	551	31
	W	612	37	587	35	595	27	595	27	551	5	595	40	612	18	595	27	612	28	574	9
	R-1	595	54	595	40	595	40	595	40	595	40	595	54	595	40	595	40	595	40	551	43
	R-2	612	28	566	17	566	8	566	17	551	10	612	18	582	8	492	12	492	6	574	9
	G-1	595	12	551	10	583	21	551	10	574	5	587	18	566	17	583	42	587	18	566	54
	G-2	587	68	587	35	587	53	587	35	587	8	587	53	587	18	587	35	587	35	551	43
	Y-1	595	37	583	42	595	40	587	53	583	42	595	40	583	62	595	27	612	28	574	9
	Y-2	595	40	583	42	595	27	612	18	566	8	595	27	612	18	595	27	612	28	574	15
Chip		587	67	499	27	5610	31	495	33	492	36	612	37	486	57	575	61	551	40	[illegible]	
15	W	583	42	583	21	583	42	583	42	583	21	583	42	583	21	583	62	583	42	551	31
	W	612	37	583	42	595	27	595	12	583	42	595	40	583	21	612	28	612	37	574	9
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	551	43
	R-2	612	28	566	35	612	28	566	17	566	35	612	28	566	17	566	35	612	18	574	15
	G-1	595	12	574	5	587	18	551	10	574	5	583	21	566	17	583	42	587	18	566	54
	G-2	587	61	587	35	587	35	587	35	587	8	587	35	587	8	587	11	587	35	574	20
	Y-1	595	37	583	42	595	40	595	40	583	42	595	54	587	53	595	27	612	28	574	15
	Y-2	595	27	583	42	587	35	612	18	612	18	612	28	612	18	595	27	595	40	574	15

TABLE 40

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16	W	583	21	583	10	583	21	583	10	583	10	583	21	583	10	583	62	583	11	575	30
	W	583	21	455	8	455	8	455	17	478	22	583	10	455	8	575	27	455	8	575	6
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	575	40	572	32
	R-2	595	12	478	11	595	6	478	11	478	27	595	12	478	5	595	6	612	4	566	17
	G-1	455	4	566	8	538	4	492	6	575	11	492	4	587	53	583	42	492	4	583	62
	G-2	583	10	515	11	583	10	515	11	575	11	583	10	575	11	583	42	583	10	575	48
	Y-1	612	18	566	8	566	17	455	17	566	8	538	24	566	8	538	24	566	24	583	10
	Y-2	538	16	455	17	566	24	478	[illegible]	481	24	566	24	486	25	566	17	455	8	566	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
17	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	575	30	572	11	572	32
	W	583	10	455	8	455	4	455	17	455	17	583	10	455	8	612	9	583	10	583	10
	R-1	595	57	595	40	595	54	595	40	595	40	595	54	595	40	595	40	595	40	566	35
	R-2	595	12	478	5	595	12	455	4	478	5	612	9	566	17	566	8	595	6	566	17
	G-1	455	4	587	18	612	4	612	9	612	9	566	4	595	12	583	42	595	6	583	62
	G-2	583	21	515	11	583	21	575	11	515	11	583	21	575	11	583	42	583	21	575	30
	Y-1	583	42	455	17	566	24	566	24	551	5	566	24	538	16	566	31	538	24	566	8
	Y-2	538	16	455	8	538	16	538	16	499	3	538	16	499	3	566	17	538	16	566	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
18	W	583	10	583	10	583	10	583	[illegible]	583	10	583	10	583	10	583	10	583	10	570	17
	W	583	42	455	8	566	8	566	17	566	17	455	8	583	21	566	17	583	21	566	8
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	27	591	31
	R-2	587	8	478	5	595	6	478	5	478	5	587	8	551	10	566	17	595	6	559	10
	G-1	478	5	455	4	455	4	566	8	575	11	566	4	595	12	575	11	587	8	583	62
	G-2	583	16	575	11	583	42	583	21	575	11	583	42	575	11	575	11	583	21	592	47
	Y-1	612	18	492	12	575	37	492	12	492	5	612	18	612	18	538	24	575	37	566	8
	Y-2	612	18	492	8	538	16	538	16	587	18	612	18	612	18	566	24	612	18	566	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
19	W	595	6	575	6	595	6	575	6	595	6	583	6	575	6	575	6	575	6	595	54
	W	566	8	455	8	455	4	455	8	455	17	478	5	481	24	478	22	566	4	492	24
	R-1	595	27	595	27	575	27	595	27	595	27	595	27	595	27	595	27	587	27	595	54
	R-2	595	12	587	18	587	8	587	18	478	11	587	8	587	8	478	5	478	5	595	40
	G-1	455	4	566	8	455	4	612	4	478	5	492	3	583	10	575	11	544	2	595	54
	G-2	492	6	492	12	492	6	492	6	492	12	492	6	492	12	492	12	492	6	492	24
	Y-1	—		455	17	566	17	566	24	566	17	455	4	566	24	566	31	—		595	54
	Y-2	455	17	455	17	455	4	455	4	566	17	—		566	8	455	8	455	4	595	54
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
20	W	583	6	575	6	595	6	575	6	595	6	575	6	575	6	575	6	575	6	575	27
	W	478	5	566	8	478	5	478	11	566	17	478	5	566	24	481	24	455	8	595	27
	R-1	587	35	587	35	587	35	587	35	587	35	587	35	591	35	575	17	587	35	592	32
	R-2	481	24	587	18	481	12	481	12	587	35	481	6	587	35	481	24	575	6	612	9
	G-1	455	4	583	10	455	4	587	8	575	12	551	5	587	18	575	11	551	5	575	40
	G-2	492	3	492	6	492	6	492	6	492	6	492	3	492	6	492	3	492	6	492	19
	Y-1	455	4	566	17	566	8	566	17	566	31	455	4	566	31	481	37	481	8	595	27
	Y-2	—		566	24	481	12	481	12	566	24	481	12	566	24	455	4	455	4	575	40

TABLE 41

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
PROJ. PR. No. 21 — AMB. ILL.																				
W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
W	455	4	566	8	566	4	566	8	566	17	—		566	24	[illegible]	25	566	8	575	12
R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	11	575	27	572	17
R-2	478	5	481	6	478	5	455	8	566	4	478	5	455	4	[illegible]	25	478	5	486	4
G-1	492	3	492	9	488	6	488	6	491	6	491	12	575	6	575	11	580	10	573	42
G-2	492	3	492	3	492	3	492	3	492	3	492	3	492	3	572	11	492	2	492	12
Y-1	—		455	8	566	8	566	17	566	24	491	12	566	31	[illegible]	37	566	24	575	6
Y-2	491	6	566	17	491	12	491	12	566	24	575	6	566	24	491	24	491	12	575	6
Chip	587	67	499	27	561a	31	455	33	490	36	612	37	486	37	575	61	551	40	[illegible]	
PROJ. PR. No. 22 — AMB. ILL.																				
W	566	17	566	17	566	17	566	17	566	17	566	17	566	17	566	8	566	17	566	8
W	575	30	572	32	575	30	575	20	575	48	575	48	575	48	566	31	572	18	566	17
R-1	577	53	578	62	577	53	578	62	575	30	577	53	575	61	577	53	577	53	491	24
R-2	[illegible]	24	573	21	573	10	573	42	573	42	455	4	573	42	478	31	573	10	478	17
G-1	566	8	572	17	566	8	572	11	570	17	551	11	570	32	455	17	566	17	566	17
G-2	572	17	572	32	572	32	572	32	572	32	572	17	572	17	572	11	572	17	566	24
Y-1	575	60	575	30	575	80	575	48	575	30	575	42	575	30	566	31	575	42	566	24
Y-2	575	30	575	48	575	34	575	48	575	48	575	30	575	48	566	31	575	30	455	17
Chip	587	67	499	27	561a	31	455	33	490	36	612	37	486	37	575	61	551	40	[illegible]	
PROJ. PR. No. 23 — AMB. ILL.																				
W	566	8	566	8	566	8	566	8	573	10	573	10	580	10	566	8	580	10	566	8
W	577	35	579	42	577	35	579	35	579	42	579	35	575	27	455	24	612	18	488	12
R-1	577	53	579	53	579	53	577	53	577	53	577	53	[illegible]	53	577	53	577	53	574	15
R-2	573	21	573	10	577	18	577	8	579	42	[illegible]	10	573	21	478	17	573	10	499	3
G-1	574	5	580	21	566	8	577	8	575	12	551	10	575	12	574	5	573	10	566	35
G-2	573	21	573	42	573	42	573	21	573	42	573	21	573	21	573	10	573	21	499	3
Y-1	577	35	573	42	575	37	573	42	573	42	575	27	605	27	488	5	580	18	492	3
Y-2	612	18	573	42	577	35	612	18	573	42	573	21	573	35	566	24	580	27	488	8
Chip	587	67	499	27	561a	31	455	33	490	36	612	37	486	37	575	61	551	40	[illegible]	
PROJ. PR. No. 24 — AMB. ILL.																				
W	573	21	573	21	573	21	573	21	573	21	573	21	573	21	566	4	573	21	566	17
W	492	12	573	35	612	18	575	27	612	18	492	12	612	18	566	17	612	18	551	5
R-1	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	53	566	54
R-2	566	8	573	17	551	5	551	10	573	42	577	10	577	8	566	35	577	8	499	6
G-1	573	5	573	21	573	10	580	11	580	12	577	10	577	11	551	11	577	11	570	32
G-2	573	21	573	42	580	40	580	40	573	42	573	42	573	42	580	10	580	12	551	20
Y-1	575	27	577	53	575	40	575	31	575	27	612	24	612	18	566	8	612	31	[illegible]	6
Y-2	577	35	580	27	612	18	612	11	612	18	575	24	575	27	551	10	612	18	[illegible]	6
Chip	587	67	499	27	561a	31	455	33	490	36	612	37	486	37	575	61	551	40	[illegible]	
PROJ. PR. No. 25 — AMB. ILL.																				
W	575	11	575	11	575	11	575	11	575	11	575	11	575	8	575	11	575	11	575	8
W	575	12	573	21	577	11	566	8	566	17	492	12	566	17	566	24	577	17	566	8
R-1	577	53	577	53	577	53	577	53	577	53	577	53	577	53	577	42	577	43	566	35
R-2	580	10	577	18	577	8	577	10	580	42	577	8	580	31	551	30	573	10	499	6
G-1	566	4	492	3	492	4	551	5	577	11	566	8	492	6	575	[illegible]	551	10	573	42
G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
Y-1	575	31	575	35	575	22	575	31	575	31	580	35	612	18	566	8	580	27	551	5
Y-2	577	18	580	42	575	37	580	37	566	17	580	31	566	24	566	17	566	24	551	5

TABLE 42

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 7

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
26	W	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	583	62	561c	4	561c	8
	W	595	12	455	17	478	11	481	12	481	36	492c	12	481	24	492c	19	481	12	595	6
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	40	592	17
	R-2	612	21	486	25	595	40	481	24	478	22	595	27	478	11	595	27	595	12	499	3
	G-1	478	6	481	12	478	11	478	11	455	8	455	4	537	10	595	27	[illegible]	10	[illegible]	53
	G-2	583	21	583	10	583	21	583	10	583	10	583	21	583	21	[illegible]	42	583	10	[illegible]	15
	Y-1	587	35	587	35	595	27	595	27	595	27	587	35	612	18	586	8	588	27	595	6
	Y-2	583	21	481	12	538	16	481	24	481	36	561c	24	481	36	582	22	[illegible]	12	612	4
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	White	
27	W	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4
	W	612	9	455	8	561c	8	561c	8	478	11	492c	12	478	22	612	18	561c	8	583	10
	R-1	595	40	595	27	595	27	595	27	595	27	595	40	595	27	595	27	595	27	592	31
	R-2	612	4	486	7	595	6	486	7	478	11	455	4	455	8	455	4	588	10	499	3
	G-1	514	2	499	6	514	2	514	2	575	11	537	5	537	5	577	18	537	5	583	42
	G-2	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	561c	4
	Y-1	583	21	514	2	587	18	587	18	587	35	561c	16	561c	16	595	27	588	35	[illegible]	10
	Y-2	583	21	481	12	561c	24	481	12	481	24	561c	24	481	24	561c	24	561c	18	499	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	White	
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	56k	31	455	33	492	36	612	37	486	37	575	61	551	40	White	
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	56k	31	455	33	492	36	612	37	486	37	575	61	551	40	White	
	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				

TABLE 43

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

Proj. Pr.	Amb. Ill.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 1	W	575	48	573	62	575	48	575	30	573	62	575	48	573	62	572	32	586	62	478	32
	W	572	60	538	32	572	32	538	32	538	32	572	60	538	32	572	32	538	24	481	24
	R-1	575	61	492	19	575	61	573	62	492	19	575	61	612	28	575	30	612	28	481	36
	R-2	587	35	538	16	587	53	538	16	538	24	573	42	538	16	575	30	538	8	478	32
	G-1	566	35	566	17	478	22	587	10	612	18	572	47	492	15	572	32	538	16	481	24
	G-2	575	48	587	53	575	48	587	35	587	53	575	30	587	53	575	18	587	53	478	41
	Y-1	575	61	538	32	575	48	538	24	538	32	575	61	538	32	572	60	538	32	478	22
	Y-2	575	48	538	32	575	30	538	24	538	32	575	48	538	32	572	47	538	24	478	32
Chip		587	67	499	27	5816	31	455	33	498	36	612	37	486	37	575	61	551	40	[illegible]	
No. 2	W	575	48	587	53	575	48	587	53	587	53	575	48	587	53	572	17	587	53	478	32
	W	575	48	538	32	572	32	538	24	538	32	572	60	538	32	572	47	538	24	478	25
	R-1	573	42	612	28	573	42	612	18	612	28	573	42	612	28	572	32	612	28	481	36
	R-2	573	42	556	24	573	42	455	24	455	24	573	62	455	24	575	30	455	17	481	36
	G-1	566	35	455	17	575	18	566	8	455	17	572	32	566	24	572	17	455	8	478	32
	G-2	575	30	587	53	575	30	587	35	587	53	575	30	587	53	572	32	587	53	481	36
	Y-1	575	61	538	32	575	48	538	32	575	61	538	32	572	60	575	61	538	22	481	36
	Y-2	566	35	538	32	566	17	538	24	538	32	575	48	538	32	572	47	538	24	481	36
Chip		587	67	499	27	5816	31	455	33	498	36	612	37	486	37	575	61	551	40	[illegible]	
No. 3	W	572	17	587	35	572	17	587	35	587	35	572	17	587	35	572	32	587	35	566	17
	W	575	48	573	42	575	30	575	30	566	17	572	47	566	24	572	32	566	8	455	8
	R-1	573	62	492	26	587	53	612	28	492	26	587	53	492	26	572	47	492	26	492	27
	R-2	573	62	455	31	573	62	455	24	455	31	573	78	455	24	575	48	455	17	455	24
	G-1	538	35	478	22	566	17	574	2	481	24	566	35	455	17	572	32	481	12	492	22
	G-2	575	30	538	16	575	30	538	8	538	16	575	18	538	16	575	18	538	16	538	24
	Y-1	575	61	538	24	575	30	538	24	538	32	575	48	538	32	572	47	538	24	566	8
	Y-2	575	30	566	31	575	18	566	24	566	31	575	30	566	31	572	47	566	24	566	17
Chip		587	67	499	27	5816	31	455	33	498	36	612	37	486	37	575	61	551	40	[illegible]	
No. 4	W	572	17	538	4	572	17	572	17	538	4	572	17	538	4	572	32	538	4	538	24
	W	575	40	455	24	572	32	455	24	455	31	575	47	455	24	575	34	455	17	566	24
	R-1	587	53	587	18	587	53	587	18	587	18	587	35	587	18	573	42	587	18	538	24
	R-2	575	40	455	8	575	27	566	17	566	17	587	53	455	17	575	37	538	16	538	32
	G-1	566	17	481	24	551	10	496	6	481	24	566	17	492	25	573	42	574	5	492	31
	G-2	575	30	538	16	575	30	575	11	538	8	575	30	538	8	575	18	538	8	538	32
	Y-1	575	61	566	24	575	48	575	30	566	24	575	61	455	24	575	54	455	24	566	24
	Y-2	575	61	455	24	575	30	455	24	455	31	575	48	455	24	[illegible]	53	455	24	[illegible]	[illegible]
Chip		587	67	499	27	5816	31	455	33	498	36	612	37	486	37	575	61	551	40	[illegible]	
No. 5	W	572	32	572	17	572	32	572	32	572	17	572	32	572	17	572	32	572	17	566	24
	W	566	24	455	17	566	31	566	31	455	17	566	31	455	17	575	30	455	17	566	24
	R-1	575	61	575	30	575	48	575	18	575	18	575	30	575	11	575	30	575	18	566	31
	R-2	575	40	566	8	575	27	575	8	455	8	575	40	492	15	575	40	492	22	538	32
	G-1	573	31	574	5	572	17	481	6	574	5	492	32	492	1	575	30	566	17	538	32
	G-2	572	60	572	11	572	32	572	32	574	11	572	32	572	11	572	32	572	17	566	31
	Y-1	572	60	572	32	572	60	572	32	572	32	572	60	572	32	[illegible]	[illegible]	[illegible]	60	566	31
	Y-2	575	61	572	32	575	48	575	30	455	17	575	61	455	17	575	35	455	17	566	31

TABLE 44

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	575	30	455	4	575	30	575	18	455	4	575	30	455	4	572	17	455	4	455	24
	W	575	48	455	17	575	48	575	30	455	17	575	48	455	17	575	32	575	48	455	31
	R-1	575	61	492	30	575	61	583	62	492	22	583	62	492	22	572	32	492	22	478	32
	R-2	583	62	455	17	583	42	583	42	566	17	583	62	566	17	572	32	583	42	455	17
	G-1	566	35	499	6	551	10	551	5	499	9	566	35	481	12	572	32	574	2	566	24
	G-2	572	32	566	4	572	17	566	4	566	4	572	32	566	4	572	17	566	4	566	24
	Y-1	575	61	575	30	575	48	575	30	538	24	575	61	538	32	572	60	538	24	455	17
	Y-2	575	48	566	24	575	30	566	17	566	24	575	48	538	16	572	47	566	17	566	17
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
7	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	566	1	583	42	551	43
	W	587	35	587	35	575	27	575	27	583	42	575	27	612	11	572	47	612	18	499	20
	R-1	575	40	575	57	575	40	575	40	575	40	575	40	575	44	575	27	575	40	551	43
	R-2	575	27	612	18	575	27	575	27	612	18	612	18	575	40	572	47	575	40	574	9
	G-1	578	10	612	4	575	12	575	6	612	4	587	18	583	10	572	17	587	18	551	31
	G-2	583	62	583	62	583	62	583	42	583	42	583	42	583	62	574	5	583	62	574	20
	Y-1	587	53	583	62	583	42	583	42	587	35	583	42	583	42	574	5	575	37	574	15
	Y-2	583	42	575	37	583	62	587	35	587	35	583	42	575	27	566	8	575	40	499	20
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
8	W	583	42	583	21	583	42	583	21	583	21	583	42	583	21	572	32	583	42	566	35
	W	575	27	583	42	587	35	587	35	566	17	587	35	566	17	572	47	566	24	574	5
	R-1	587	53	575	40	587	53	587	35	587	53	575	40	587	53	575	30	587	53	551	43
	R-2	575	40	612	25	575	40	575	27	486	15	575	12	575	40	575	48	575	40	551	20
	G-1	587	18	486	13	566	4	481	6	486	13	612	9	481	12	575	30	475	5	478	22
	G-2	583	62	583	10	583	42	583	42	583	10	583	42	583	10	575	30	583	42	572	32
	Y-1	587	35	583	42	583	42	583	42	587	35	583	62	587	35	575	6	583	42	574	9
	Y-2	587	35	566	16	583	42	583	42	583	21	587	35	583	21	572	47	583	62	551	20
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
9	W	574	2	574	9	574	5	574	9	574	9	574	2	574	9	583	62	574	9	566	4
	W	575	40	481	24	486	13	486	25	486	37	575	27	486	37	587	61	486	37	486	7
	R-1	575	40	575	6	575	27	575	6	575	6	575	27	575	6	575	61	575	12	551	20
	R-2	575	54	486	37	486	13	486	25	486	37	575	54	486	25	575	54	486	13	455	4
	G-1	587	18	499	13	583	21	574	5	499	13	575	12	574	9	575	40	499	13	587	53
	G-2	583	42	551	10	566	8	566	8	566	8	583	42	566	8	575	48	551	5	566	17
	Y-1	583	42	486	25	583	31	486	25	486	37	587	45	486	37	575	54	486	25	486	7
	Y-2	583	42	[illegible]	37	487	12	486	37	486	37	583	62	486	37	587	61	[illegible]	25	612	4
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
10	W	583	21	551	5	583	21	551	5	551	5	583	21	551	5	583	42	551	5	551	5
	W	587	35	481	12	566	16	455	8	486	25	566	24	486	25	612	11	455	8	486	6
	R-1	587	53	587	35	587	35	587	18	587	18	587	53	587	18	575	48	587	35	551	20
	R-2	486	27	478	11	575	37	478	5	478	11	575	12	486	4	575	37	575	12	574	2
	G-1	583	10	574	9	583	10	551	10	499	13	575	12	574	9	583	42	499	5	551	20
	G-2	551	5	551	5	551	5	551	5	551	20	551	11	551	20	575	61	551	11	499	3
	Y-1	575	37	499	6	587	35	583	21	499	3	587	50	499	3	587	37	[illegible]	42	499	6
	Y-2	575	37	486	13	575	37	486	7	486	13	575	37	486	13	587	35	486	13	486	7

TABLE 45

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	573	42	573	10	573	42	573	10	573	10	573	42	573	10	575	32	573	10	574	5
	W	577	35	582	8	582	16	582	16	566	17	575	27	566	17	583	62	577	35	488	12
	R-1	577	53	577	53	577	53	577	35	577	35	577	53	577	35	575	48	577	53	574	20
	R-2	577	35	575	27	577	35	577	35	577	35	575	12	575	27	575	48	[illegible]	40	488	3
	G-1	573	10	574	5	573	10	574	5	574	9	575	12	551	10	573	42	566	17	566	35
	G-2	573	62	573	10	573	42	573	10	573	10	573	42	573	10	575	48	573	10	574	9
	Y-1	573	42	577	35	577	35	577	35	577	35	583	62	577	35	575	6	577	53	487	12
	Y-2	577	35	573	42	577	35	582	16	573	24	577	35	575	42	577	35	577	35	488	12
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
12	W	573	62	573	21	573	62	573	21	573	21	573	62	573	21	575	30	573	42	566	35
	W	577	35	566	17	582	16	582	8	455	8	575	27	566	17	566	35	582	16	574	9
	R-1	577	68	577	53	577	53	577	53	577	53	577	53	577	53	575	48	577	53	551	43
	R-2	575	54	577	53	575	40	577	35	577	53	575	6	577	35	575	48	575	6	551	20
	G-1	577	18	574	5	577	11	574	5	574	9	577	11	551	20	575	48	566	4	575	48
	G-2	573	78	573	21	573	62	573	42	573	21	573	42	573	21	575	48	573	62	566	35
	Y-1	577	53	583	62	577	35	573	62	582	10	612	28	577	35	575	42	612	28	577	25
	Y-2	575	40	573	42	612	28	573	42	573	24	612	24	612	18	575	48	573	24	551	31
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
13	W	573	42	551	10	573	21	551	5	551	10	573	42	551	5	573	62	577	5	572	17
	W	492	22	492	18	566	24	492	18	499	20	566	24	499	27	612	37	492	13	551	10
	R-1	575	40	573	62	577	35	577	35	573	21	577	53	573	21	575	48	566	27	551	43
	R-2	575	54	478	11	575	27	478	11	478	22	575	40	478	11	575	54	566	8	551	20
	G-1	577	18	499	13	577	8	574	5	499	13	575	12	499	13	577	53	574	9	573	42
	G-2	573	62	551	10	573	62	551	5	551	20	573	62	551	20	575	61	572	10	572	47
	Y-1	575	40	566	8	492	17	566	16	575	40	566	17	575	40	566	35	575	40	551	10
	Y-2	575	27	492	27	612	18	492	18	492	27	612	18	492	27	573	53	492	18	566	8
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
14	W	573	62	566	8	573	62	573	21	566	17	573	62	566	17	573	62	573	42	566	35
	W	575	27	566	8	612	18	488	12	[illegible]	18	492	22	574	9	566	24	566	24	574	9
	R-1	577	68	577	35	575	27	575	27	575	27	577	53	577	35	583	62	577	53	551	43
	R-2	575	12	488	6	575	12	575	6	488	6	575	6	488	6	582	4	575	6	574	9
	G-1	577	18	574	9	573	21	574	5	574	9	577	18	551	20	577	35	551	10	566	54
	G-2	573	62	566	17	573	62	566	17	566	54	573	62	566	54	575	48	566	54	566	54
	Y-1	575	40	566	8	612	28	573	42	566	8	575	40	566	8	575	54	612	28	574	9
	Y-2	577	35	566	8	577	35	566	8	566	17	575	40	566	8	575	27	612	18	574	9
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
15	W	573	62	573	42	573	62	573	42	573	21	573	62	573	21	573	62	573	62	551	31
	W	575	27	573	42	577	35	577	35	551	10	575	27	551	5	566	17	612	28	574	9
	R-1	577	68	577	53	577	53	577	53	577	53	577	53	577	53	575	30	575	40	574	15
	R-2	575	6	577	35	577	18	577	35	573	42	575	27	577	35	583	62	577	11	574	9
	G-1	577	11	551	20	573	21	551	10	574	5	575	12	551	20	573	42	566	17	566	54
	G-2	551	33	577	18	577	35	577	18	577	8	577	35	577	8	575	48	577	11	551	31
	Y-1	575	54	577	53	575	40	577	53	573	62	575	54	577	35	573	21	612	28	574	9
	Y-2	575	27	577	35	577	35	575	27	612	18	573	42	575	27	612	18	577	35	551	20

TABLE 46

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

PROJ. PR.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 16 RESPONSES	W	583	21	566	17	583	10	566	17	566	35	583	21	551	5	583	62	551	5	575	48
	W	612	18	574	9	566	8	499	6	574	9	566	24	574	9	536	32	574	9	583	21
	R-1	595	54	595	27	595	40	595	27	595	27	595	40	595	12	583	62	595	12	572	32
	R-2	595	12	566	35	595	12	566	35	566	35	595	27	566	35	595	40	566	54	575	48
	G-1	583	10	551	10	551	5	574	2	566	17	583	0	551	10	575	42	566	17	587	68
	G-2	583	62	583	10	583	42	583	21	583	10	583	42	583	21	587	53	583	10	583	78
	Y-1	492	12	499	13	574	5	499	6	499	20	566	24	499	13	566	31	499	13	583	10
	Y-2	583	42	499	13	566	17	499	13	499	20	566	24	499	13	595	40	499	13	583	21
Chip		587	67	499	27	561a	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 17 RESPONSES	W	583	21	566	17	566	17	566	8	566	17	583	21	566	8	583	42	566	8	575	30
	W	583	10	574	5	566	8	514	2	551	10	566	17	574	5	536	52	574	2	583	21
	R-1	612	57	612	28	612	32	612	36	612	26	612	27	587	53	587	53	612	18	572	32
	R-2	595	6	551	10	587	1	551	5	566	35	595	6	566	17	587	35	587	8	575	30
	G-1	492	4	492	6	492	3	512	4	455	8	455	4	595	6	587	35	551	10	583	78
	G-2	583	21	583	10	583	21	583	10	551	5	583	42	551	5	583	42	551	5	575	48
	Y-1	492	12	574	5	566	24	566	17	574	5	566	24	574	5	566	31	566	17	566	8
	Y-2	536	16	499	13	536	16	499	6	499	20	566	24	499	13	536	24	499	6	575	48
Chip		587	67	499	27	561a	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 18 RESPONSES	W	572	11	572	11	[illegible]	[illegible]	[illegible]	[illegible]	572	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	572	32
	W	583	10	587	18	587	8	587	18	595	12	587	18	583	21	478	5	583	10	551	5
	R-1	612	25	612	28	612	28	612	18	612	18	612	18	612	18	595	30	612	28	574	20
	R-2	587	18	583	21	595	12	587	18	587	8	595	6	587	8	575	18	595	6	551	5
	G-1	574	2	499	3	499	6	514	6	612	7	492	6	587	8	575	11	612	4	481	36
	G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	Y-1	583	42	587	35	575	27	612	18	612	18	492	12	587	35	566	24	583	42	551	5
	Y-2	536	16	583	42	536	16	536	16	583	42	536	16	583	42	455	17	583	42	566	8
Chip		587	67	499	27	561a	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 19 RESPONSES	W	575	13	575	12	575	12	575	12	575	12	575	12	575	12	575	12	575	12	575	54
	W	478	5	455	8	455	4	455	8	478	11	455	4	455	8	478	22	—		612	28
	R-1	492	6	492	6	492	6	492	6	492	6	492	6	492	6	492	6	492	6	492	19
	R-2	583	10	587	8	587	8	587	8	583	10	583	21	587	8	583	10	587	8	612	37
	G-1	499	6	575	11	551	10	551	10	587	18	551	5	499	3	575	18	551	5	595	54
	G-2	595	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	6	595	54
	Y-1	—		566	17	455	17	551	5	478	11	—		566	24	566	24	455	8	575	57
	Y-2	566	8	455	17	455	24	566	17	566	35	566	8	566	17	455	24	—		575	57
Chip		587	67	499	27	561a	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 20 RESPONSES	W	566	8	583	10	566	8	566	8	583	10	566	8	583	13	510	11	583	10	595	12
	W	478	32	566	17	455	17	455	8	566	24	455	8	536	16	486	37	455	4	575	27
	R-1	595	12	595	40	595	27	595	27	595	27	595	12	595	27	551	10	595	27	566	35
	R-2	481	24	612	18	481	12	481	12	595	40	481	24	595	27	486	37	595	12	595	6
	G-1	574	6	583	21	583	10	587	8	595	6	499	20	583	21	575	18	566	8	595	40
	G-2	[illegible]	8	583	42	583	10	583	10	583	42	595	10	587	42	575	11	583	10	587	53
	Y-1	[illegible]	25	566	24	566	17	566	24	566	31	[illegible]	25	566	31	486	37	566	24	595	6
	Y-2	[illegible]	37	536	24	[illegible]	35	[illegible]	35	536	32	[illegible]	25	536	32	486	37	536	24	595	27

TABLE 47

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ.PR. No. 21 — RESPONSES	AMB. ILL. W	573	10	573	31	573	10	573	10	573	31	573	10	573	31	575	11	573	31	566	4
	W	455	4	566	4	566	4	566	8	566	24	481	24	566	17	481	24	566	17	595	6
	R-1	577	33	595	40	581	53	581	53	595	40	581	53	595	40	551	10	595	40	551	20
	R-2	478	5	595	12	478	5	455	4	595	12	478	5	595	12	481	24	595	6	455	4
	G-1	499	3	574	2	499	3	499	3	496	4	612	9	566	8	572	11	566	8	587	35
	G-2	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	573	10	612	78
	Y-1	481	12	538	24	478	11	538	16	538	24	481	12	538	30	481	24	538	24	577	8
	Y-2	488	23	566	24	566	17	566	24	566	24	488	23	566	31	488	12	566	24	575	6
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 22 — RESPONSES	AMB. ILL. W	572	17	572	32	572	17	572	32	572	47	572	17	572	30	572	11	[illegible]	32	455	24
	W	575	30	575	48	572	32	575	48	572	47	575	30	572	47	566	31	575	48	566	17
	R-1	577	53	575	61	577	53	577	53	575	61	577	53	575	61	486	22	575	61	486	37
	R-2	566	17	578	42	566	17	566	17	575	30	566	24	581	18	566	31	577	35	566	31
	G-1	499	3	566	35	551	10	566	17	572	32	574	5	566	35	455	17	566	35	566	24
	G-2	572	11	572	47	572	17	572	17	572	47	572	11	572	47	572	11	572	47	566	24
	Y-1	575	30	575	61	575	48	575	61	575	61	538	24	575	61	566	31	575	61	566	31
	Y-2	575	30	575	61	575	48	575	48	575	61	575	30	575	61	566	31	575	48	566	31
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 23 — RESPONSES	AMB. ILL. W	573	62	573	42	573	42	573	42	573	42	573	42	573	42	573	10	573	42	442	18
	W	566	8	587	53	575	27	575	27	573	62	538	16	538	24	488	31	538	24	492	9
	R-1	587	53	587	53	587	53	587	53	587	53	581	53	581	53	587	11	587	53	499	27
	R-2	587	35	587	18	575	27	575	27	573	42	575	27	575	27	551	16	587	8	492	18
	G-1	587	5	573	42	551	10	573	10	587	53	574	5	581	35	499	13	587	11	551	20
	G-2	587	18	587	35	587	18	587	18	587	35	587	18	587	35	551	10	587	35	551	20
	Y-1	587	35	575	37	587	35	573	62	573	62	573	42	581	53	[illegible]	37	587	35	478	12
	Y-2	573	[illegible]	587	53	587	35	573	62	573	62	587	35	612	[illegible]	[illegible]	[illegible]	575	27	488	28
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 24 — RESPONSES	AMB. ILL. W	573	42	573	62	573	62	573	62	573	62	573	42	573	62	566	8	573	62	551	31
	W	551	5	538	16	566	8	538	16	538	24	455	17	538	24	499	20	538	24	574	9
	R-1	581	53	595	59	595	59	575	40	575	40	581	53	595	40	574	18	575	40	551	43
	R-2	587	35	587	18	595	27	575	27	587	18	587	8	581	8	572	32	595	6	574	9
	G-1	574	5	581	18	573	[illegible]	581	8	573	42	574	5	612	18	574	9	577	11	566	54
	G-2	581	18	587	68	587	35	587	35	581	53	577	11	574	68	566	17	587	53	566	54
	Y-1	573	62	587	53	587	35	577	35	575	40	587	35	575	27	499	20	575	27	574	15
	Y-2	573	42	595	37	587	35	595	27	612	28	573	62	612	28	566	35	612	37	574	15
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 25 — RESPONSES	AMB. ILL. W	573	10	573	10	573	10	573	10	573	10	573	10	573	10	572	11	573	10	[illegible]	[illegible]
	W	573	10	566	17	566	24	566	17	566	17	566	24	566	24	566	35	566	24	566	8
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	595	30	595	40	551	31
	R-2	595	12	595	6	595	6	595	6	595	6	577	8	595	6	595	30	597	7	551	10
	G-1	577	8	566	4	455	4	566	4	481	6	492	5	551	5	595	18	577	13	481	36
	G-2	573	10	573	10	573	10	573	10	573	10	573	10	573	10	575	18	573	10	575	30
	Y-1	577	35	595	27	595	27	612	18	612	18	595	27	612	18	566	17	612	18	551	5
	Y-2	577	35	612	18	587	35	612	18	538	16	587	35	612	18	572	47	612	18	572	32

TABLE 48

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 8

PROJ.PR. No. 26 / AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	21	[illegible]	10	[illegible]	15	[illegible]	21	[illegible]	15	582	62	583	10	595	27
W	586	16	486	25	455	8	486	25	486	37	566	24	486	37	566	31	486	37	595	12
R-1	587	66	521	35	581	53	[illegible]	35	583	21	583	42	583	21	575	48	583	21	572	17
R-2	575	27	481	24	481	12	481	12	481	36	595	27	481	24	595	54	481	21	486	5
G-1	595	6	514	9	551	10	574	2	455	8	595	12	574	5	575	27	551	10	595	54
G-2	587	18	587	8	581	18	587	18	587	8	587	18	587	8	587	68	587	8	587	68
Y-1	583	42	481	36	455	17	481	34	481	36	566	31	481	36	586	32	486	25	595	6
Y-2	486	5	488	23	566	17	481	23	488	34	586	24	488	23	612	28	488	23	612	18
Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. 27 / AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	[illegible]	[illegible]	[illegible]	[illegible]	583	10	[illegible]	10	[illegible]	10	[illegible]	10	583	16	575	62	583	10	595	12
W	583	21	486	25	587	18	486	25	486	25	586	16	486	25	586	32	586	17	587	8
R-1	581	53	587	18	581	55	581	35	581	18	581	50	587	18	583	42	583	21	551	20
R-2	595	12	478	11	595	6	478	11	478	22	595	27	478	22	595	12	478	11	486	3
G-1	551	10	499	3	574	2	574	2	499	6	492	3	551	10	587	18	551	10	587	35
G-2	587	8	587	8	587	8	581	8	581	8	587	8	587	8	587	53	587	8	587	35
Y-1	583	42	481	24	566	17	481	12	481	24	566	24	481	24	566	31	481	12	587	8
Y-2	612	18	486	13	492	12	486	13	486	25	586	24	486	25	612	28	486	13	612	4
Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. / AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	white	

PROJ.PR. No. / AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	white	

PROJ.PR. No. / AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				

TABLE 49

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	575	48	573	42	575	48	575	30	583	42	575	48	573	42	573	32	575	48	478	32
	W	572	60	536	24	572	47	572	47	536	32	572	60	536	34	572	47	536	16	478	22
	R-1	583	62	587	53	583	62	583	62	587	53	583	62	587	53	512	17	587	47	491	36
	R-2	566	4	566	17	575	11	575	18	536	16	575	18	536	8	575	30	572	32	455	24
	G-1	575	30	496	4	572	32	572	17	455	8	572	32	566	4	572	17	575	11	478	32
	G-2	575	48	573	42	575	30	575	30	573	42	575	30	573	42	575	30	575	48	455	31
	Y-1	575	61	536	24	575	61	575	30	536	32	572	60	536	34	572	47	575	48	471	32
	Y-2	575	61	572	48	575	61	575	47	575	40	575	61	585	27	572	66	575	40	478	32
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
2	W	575	48	573	62	575	48	575	30	583	62	575	48	573	42	572	17	583	42	478	32
	W	575	46	536	32	572	47	572	47	536	32	575	61	536	32	572	32	575	61	471	22
	R-1	575	48	492	19	575	48	575	30	492	19	575	48	492	19	575	30	492	19	486	37
	R-2	583	62	566	17	583	62	583	62	566	31	583	62	536	16	575	48	587	35	478	32
	G-1	572	32	491	6	572	32	572	17	455	8	572	32	458	8	572	17	583	10	478	32
	G-2	575	48	587	53	575	48	575	30	587	53	575	30	587	53	575	18	587	53	575	48
	Y-1	575	61	536	32	575	48	575	30	536	32	575	61	536	32	572	47	536	24	478	32
	Y-2	575	48	575	40	575	61	575	61	575	40	575	61	575	40	572	60	575	40	478	32
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
3	W	575	30	575	[illegible]	575	30	575	30	583	42	575	30	583	42	572	32	583	42	455	24
	W	575	48	455	17	575	48	575	30	455	24	575	48	455	24	572	47	575	30	566	17
	R-1	583	62	492	19	583	62	575	30	492	19	583	62	492	19	575	30	492	19	486	25
	R-2	583	42	566	17	583	62	583	62	566	17	583	62	566	17	575	48	587	18	566	24
	G-1	566	35	492	9	572	17	572	17	586	13	572	32	492	3	[illegible]	33	574	5	496	22
	G-2	575	18	575	11	575	30	575	18	575	11	575	30	575	11	575	18	575	11	566	31
	Y-1	575	61	566	24	575	48	575	30	566	31	575	48	587	53	566	31	566	24	566	24
	Y-2	575	48	566	24	575	48	575	30	566	24	575	61	566	24	572	47	575	30	566	24
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
4	W	[illegible]	[illegible]	536	4	572	32	572	32	536	4	572	17	536	4	575	30	536	4	536	24
	W	575	40	455	24	575	27	575	27	455	24	575	40	455	24	575	40	566	35	566	24
	R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	536	32
	R-2	575	27	455	8	575	12	575	27	455	8	575	27	575	12	575	34	575	27	536	32
	G-1	566	35	491	6	575	18	575	11	491	6	572	32	574	5	575	30	566	17	496	22
	G-2	575	30	575	11	575	30	575	30	575	11	575	30	575	11	575	18	575	11	566	31
	Y-1	575	61	575	30	575	48	575	48	455	24	575	61	455	17	575	61	572	60	566	31
	Y-2	575	61	455	17	575	61	575	61	455	17	575	61	455	17	587	68	455	17	566	31
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
5	W	572	47	572	32	572	30	572	30	572	17	572	32	572	[illegible]	572	32	572	17	566	24
	W	575	57	566	17	566	35	566	35	566	8	575	48	566	8	575	48	572	47	566	24
	R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	536	32
	R-2	575	40	536	8	[illegible]	16	536	8	455	4	575	27	[illegible]	15	575	12	575	10	[illegible]	32
	G-1	572	32	551	10	572	17	572	17	574	5	572	32	574	5	575	11	566	17	566	24
	G-2	572	47	572	17	572	47	572	47	572	17	572	47	572	32	572	47	572	32	566	24
	Y-1	575	61	575	30	575	48	575	48	575	61	575	61	575	30	587	47	572	60	566	31
	Y-2	575	61	575	30	575	61	575	48	575	30	575	61	575	30	587	68	575	61	566	32

TABLE 50

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	572	47	572	32	572	47	572	47	572	32	572	47	572	32	572	47	572	32	455	24
	W	573	61	455	17	572	47	572	47	455	17	572	47	566	17	572	47	575	30	455	17
	R-1	575	61	575	40	575	61	575	30	595	40	575	61	595	27	575	30	595	40	455	24
	R-2	573	62	566	17	573	62	575	48	566	17	587	35	566	8	575	48	595	27	566	17
	G-1	575	30	574	5	572	17	572	17	574	15	566	35	574	5	572	32	566	17	538	24
	G-2	573	32	572	11	572	32	572	32	572	11	572	32	572	11	572	17	572	11	566	31
	Y-1	572	60	575	30	575	48	575	48	538	16	575	61	575	30	572	47	575	61	566	24
	Y-2	575	48	566	17	575	48	575	48	566	24	575	48	566	24	572	32	566	24	566	24
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	[illegible]	[illegible]	551	40	White	
7	W	573	62	573	62	573	42	573	31	573	42	573	42	573	42	573	31	573	42	574	15
	W	595	37	612	18	595	27	587	35	587	35	595	27	587	35	587	16	595	27	418	23
	R-1	595	40	595	40	575	40	595	40	595	40	595	40	595	40	595	27	595	40	551	43
	R-2	573	42	573	21	587	18	587	35	587	35	595	27	587	18	573	42	595	12	574	9
	G-1	587	35	573	21	595	12	575	11	575	11	612	18	573	10	575	11	612	18	574	15
	G-2	573	62	573	62	573	42	573	42	573	42	573	62	573	62	573	42	[illegible]	62	551	31
	Y-1	573	62	573	42	573	62	573	42	575	27	595	40	575	27	573	42	595	40	574	15
	Y-2	595	27	587	35	587	18	587	18	587	35	595	27	573	42	566	8	595	40	574	15
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
8	W	573	62	573	21	573	62	573	42	573	31	573	[illegible]	[illegible]	42	573	[illegible]	573	32	574	9
	W	595	40	612	18	612	28	612	28	492	12	595	40	612	18	595	54	595	40	499	6
	R-1	595	40	595	40	575	40	595	37	595	40	595	40	595	40	575	61	595	40	551	43
	R-2	595	27	587	35	587	18	587	35	478	5	595	12	595	27	575	30	612	28	574	5
	G-1	587	18	551	20	587	18	587	18	551	20	587	18	574	5	575	30	551	5	551	20
	G-2	573	62	573	10	573	62	573	42	573	10	573	42	573	10	573	42	573	42	551	20
	Y-1	595	40	587	35	587	35	587	35	573	42	575	40	575	27	595	27	612	28	499	13
	Y-2	595	27	573	21	575	27	573	42	573	21	575	40	566	16	587	53	595	27	574	9
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
9	W	573	62	551	5	573	62	551	5	587	5	573	62	551	5	573	42	[illegible]	[illegible]	551	5
	W	595	40	455	8	595	40	595	40	416	25	595	40	496	25	595	54	538	16	472	3
	R-1	575	40	595	12	575	40	575	12	595	12	575	40	575	12	575	12	595	12	574	5
	R-2	595	40	478	5	595	27	478	5	478	5	575	12	478	5	595	27	595	6	490	3
	G-1	595	12	574	9	595	12	574	5	574	9	551	10	574	9	587	35	551	20	551	20
	G-2	573	21	574	5	573	21	573	10	574	5	573	21	574	5	573	42	574	5	551	10
	Y-1	575	27	486	18	575	27	595	27	486	13	575	27	486	7	595	27	612	18	499	6
	Y-2	595	27	486	13	595	27	612	18	486	25	595	27	486	13	587	61	486	12	486	13
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
10	W	573	62	573	10	573	62	573	62	573	10	573	62	573	15	573	62	573	62	499	6
	W	595	40	612	28	595	27	595	27	551	5	595	27	612	18	595	27	595	27	499	12
	R-1	595	54	595	27	575	54	595	27	595	27	[illegible]	54	575	27	575	27	575	27	551	20
	R-2	595	27	478	5	595	27	478	5	478	5	595	6	587	18	587	35	595	12	490	3
	G-1	587	8	551	10	587	18	551	5	574	5	587	18	574	15	587	35	573	21	574	9
	G-2	573	42	566	8	573	42	566	8	566	8	573	42	566	8	573	62	573	42	574	9
	Y-1	575	27	566	8	595	27	587	35	551	5	612	28	575	21	575	27	575	40	499	9
	Y-2	587	35	573	42	587	35	595	27	573	21	595	27	573	21	587	53	595	27	499	25

TABLE 51

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

Proj. Pr.	Ill.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 11	W	583	42	583	21	583	42	583	21	583	21	583	42	583	21	583	42	583	42	497	6
	W	575	40	612	28	575	27	575	27	551	10	575	40	575	40	566	8	575	27	492	9
	R-1	575	57	575	40	575	40	575	40	575	40	575	40	575	27	575	27	575	40	557	31
	R-2	575	40	492	5	575	27	492	15	492	5	575	12	492	5	577	35	492	4	492	3
	G-1	577	18	557	10	583	21	575	11	551	10	575	12	551	10	577	35	583	21	557	20
	G-2	577	53	577	18	577	35	577	18	577	18	577	35	577	8	577	35	577	53	574	15
	Y-1	575	40	583	42	577	35	583	42	583	21	577	53	595	27	577	35	583	42	492	9
	Y-2	577	35	583	42	577	35	583	42	583	42	575	27	583	21	577	18	577	35	492	23
Chip		587	67	499	27	5810	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 12	W	583	62	583	21	583	62	583	42	583	21	583	62	583	21	583	62	583	42	566	54
	W	575	27	583	42	577	35	577	35	551	10	577	35	583	21	577	53	575	41	574	9
	R-1	575	57	575	40	575	40	575	27	575	27	575	40	575	27	575	27	575	40	557	43
	R-2	575	40	577	35	577	18	577	35	566	35	575	27	566	4	583	42	575	40	574	9
	G-1	575	12	557	20	577	35	577	35	551	20	577	18	551	5	577	35	577	[illegible]	566	54
	G-2	577	53	577	18	577	35	577	35	577	18	577	35	577	18	577	35	577	53	566	54
	Y-1	575	27	612	18	575	27	577	35	583	42	612	28	577	35	583	21	577	35	574	9
	Y-2	575	27	583	42	575	27	612	18	583	21	612	18	583	42	583	62	577	37	574	15
Chip		587	67	499	27	5810	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 13	W	583	62	566	8	583	62	583	62	566	8	583	62	566	8	583	62	583	42	566	35
	W	492	19	566	35	492	12	492	19	566	35	492	12	566	35	612	28	612	18	574	5
	R-1	612	37	612	28	612	28	612	28	612	28	612	19	612	18	612	18	612	28	566	54
	R-2	575	57	566	17	575	40	575	40	566	17	575	40	566	17	575	40	575	12	557	20
	G-1	577	18	557	20	583	42	583	42	574	9	575	12	557	20	575	27	557	10	566	54
	G-2	577	53	551	5	577	35	577	35	551	5	577	53	551	5	577	53	577	35	566	54
	Y-1	575	40	557	5	575	40	575	27	551	5	612	28	557	10	575	27	577	35	574	5
	Y-2	577	53	492	6	575	40	575	27	492	6	577	35	492	6	577	53	612	18	574	9
Chip		587	67	499	27	5810	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 14	W	583	42	566	8	583	42	583	42	566	8	583	42	566	8	583	42	583	42	557	20
	W	612	28	566	8	612	28	612	28	566	8	612	28	566	8	612	37	612	28	574	9
	R-1	575	54	575	40	575	54	575	40	575	40	575	57	575	40	575	40	575	40	566	54
	R-2	575	40	566	17	575	27	566	8	566	35	575	40	566	8	566	8	575	12	557	20
	G-1	577	18	557	10	575	12	577	8	574	5	575	12	551	10	575	27	551	5	566	54
	G-2	577	53	566	17	577	35	577	35	566	17	577	53	566	17	577	35	577	53	566	54
	Y-1	575	57	566	17	575	40	575	27	566	17	575	40	566	17	575	27	612	18	574	9
	Y-2	575	57	566	17	575	37	577	35	566	17	612	28	566	17	577	35	612	28	574	15
Chip		587	67	499	27	5810	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 15	W	583	42	583	21	583	42	583	42	583	21	583	42	583	21	583	42	583	42	557	20
	W	612	28	583	42	575	40	575	40	566	8	575	40	566	8	612	37	612	28	574	9
	R-1	575	57	575	27	575	27	575	27	575	27	575	40	575	27	575	27	575	40	557	43
	R-2	575	40	577	35	575	27	577	35	575	40	—		575	27	577	35	575	40	574	9
	G-1	575	12	566	10	575	12	583	21	551	10	575	12	551	10	575	27	583	12	566	35
	G-2	577	53	566	8	577	35	577	35	566	8	577	53	566	8	577	18	577	53	557	43
	Y-1	492	19	583	42	575	40	492	12	566	17	492	19	577	35	577	18	612	28	574	9
	Y-2	492	40	583	62	575	27	577	35	583	42	577	40	577	35	583	42	612	28	574	15

TABLE 52

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16	W	583	21	[illegible]	10	583	31	[illegible]	31	583	10	[illegible]	31	583	[illegible]	583	62	583	10	575	48
	W	583	21	478	11	595	27	57[illegible]	27	566	8	612	10	566	17	612	28	566	8	583	10
	R-1	595	54	595	27	575	40	595	40	595	87	575	40	575	87	595	27	575	40	566	54
	R-2	575	12	566	8	595	12	551	5	566	8	595	12	486	7	575	27	595	6	575	30
	G-1	492	3	566	8	595	12	492	6	612	9	478	5	455	8	587	35	481	6	583	78
	G-2	583	62	572	11	583	42	595	27	572	11	583	42	572	11	583	62	583	21	575	48
	Y-1	583	42	566	8	566	24	566	31	566	17	566	31	566	8	566	31	566	24	583	10
	Y-2	583	42	488	12	538	16	538	16	499	13	538	16	499	6	538	24	538	16	583	10
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
17	W	572	11	572	11	572	11	572	11	572	11	572	11	572	[illegible]	572	[illegible]	[illegible]	[illegible]	572	32
	W	566	8	455	8	566	17	566	17	481	6	566	17	481	6	566	17	566	4	583	10
	R-1	595	40	595	27	595	40	595	27	575	27	595	40	575	27	575	27	575	40	566	17
	R-2	595	12	488	6	595	12	488	6	488	12	595	6	488	6	595	12	595	6	566	35
	G-1	478	5	566	8	538	8	492	6	595	12	478	5	612	9	595	12	481	6	583	78
	G-2	583	42	572	11	583	42	583	21	572	11	583	21	572	11	583	42	583	21	575	30
	Y-1	583	42	551	5	566	17	566	24	551	5	566	31	566	17	566	31	566	24	566	8
	Y-2	538	16	574	2	538	16	538	16	574	5	538	24	574	2	538	24	538	16	572	47
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
18	W	572	[illegible]	572	11	572	[illegible]	572	[illegible]	572	[illegible]	[illegible]	[illegible]	572	11	572	11	572	11	572	17
	W	583	42	583	21	455	8	455	17	583	21	566	4	566	4	455	24	566	8	551	5
	R-1	575	40	595	27	595	27	595	27	595	27	575	41	595	37	595	27	575	40	551	20
	R-2	575	6	551	5	551	5	551	5	566	8	575	6	566	8	551	5	575	6	551	10
	G-1	481	6	455	8	478	4	566	8	492	5	481	6	587	18	575	11	612	4	583	62
	G-2	[illegible]	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	Y-1	575	21	538	16	612	18	538	24	538	16	538	24	538	24	538	16	538	24	[illegible]	8
	Y-2	538	16	551	5	538	24	538	16	551	5	538	24	538	16	538	16	538	16	566	8
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
19	W	[illegible]	12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	575	[illegible]	[illegible]	12	575	12	575	12	595	54
	W	—		455	24	455	8	455	17	455	24	455	4	455	24	455	31	455	4	612	37
	R-1	595	13	575	12	575	12	575	12	575	12	575	12	575	12	575	12	575	12	595	40
	R-2	—		478	5	455	4	478	5	478	5	481	6	455	4	478	5	478	5	492	12
	G-1	481	6	583	21	566	8	587	18	612	9	478	5	575	11	587	18	551	5	595	54
	G-2	595	6	595	6	575	6	595	6	595	6	595	6	575	6	575	6	575	6	575	54
	Y-1	—		566	24	455	17	566	24	566	31	455	4	566	24	566	31	455	4	575	54
	Y-2	566	8	455	8	455	17	455	8	455	17	—		455	8	566	8	455	4	575	54
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
20	W	59[illegible]	[illegible]	575	6	[illegible]	[illegible]	5[illegible]	6	595	6	575	6	575	6	575	6	575	6	575	27
	W	481	12	566	24	481	24	486	25	566	24	486	13	566	24	486	37	455	4	595	12
	R-1	595	12	595	27	575	12	575	12	595	27	575	12	595	27	575	11	595	12	572	17
	R-2	455	4	595	27	478	5	478	5	595	40	481	24	566	4	481	36	566	4	595	6
	G-1	492	12	587	18	574	5	492	3	587	18	486	7	595	12	575	18	551	5	595	40
	G-2	595	6	595	27	595	6	595	6	575	27	595	6	595	27	595	6	595	6	595	40
	Y-1	481	12	566	24	481	24	481	24	566	31	481	12	566	31	481	24	455	8	595	27
	Y-2	486	7	566	24	486	13	486	13	566	24	486	7	566	24	486	25	486	7	612	18

TABLE 53

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

Proj. Pr.	Amb. Ill.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 21 RESPONSES	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	W	486	13	566	4	486	13	486	25	566	24	486	25	566	24	486	37	566	24	595	6
	R-1	575	12	575	27	575	12	575	12	575	27	575	12	575	27	575	11	575	27	551	5
	R-2	478	5	455	4	478	5	478	5	492	4	455	4	582	4	481	24	582	4	492	4
	G-1	551	10	574	2	499	3	499	3	488	6	488	12	573	10	575	11	551	5	587	35
	G-2	583	10	583	10	573	10	583	10	583	10	583	10	583	10	583	10	583	10	583	42
	Y-1	455	17	566	24	481	24	481	24	566	24	481	12	566	24	481	36	566	17	595	6
	Y-2	486	7	566	17	486	7	566	17	566	17	486	7	566	24	486	25	566	17	595	6
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 22 RESPONSES	W	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	11	572	17	455	17
	W	575	61	572	60	566	24	566	24	572	60	575	48	572	47	566	31	575	48	566	17
	R-1	587	53	583	62	587	53	587	53	583	62	595	40	583	62	486	27	595	27	486	37
	R-2	566	17	583	62	566	24	566	24	583	62	566	24	583	42	566	24	583	21	478	32
	G-1	455	4	560	17	499	6	499	6	566	17	574	2	566	35	499	12	566	17	492	15
	G-2	572	11	572	32	572	11	572	11	572	32	572	11	572	32	572	11	572	32	566	24
	Y-1	575	48	575	61	582	24	582	24	575	61	582	16	575	48	566	31	575	30	566	17
	Y-2	575	30	575	48	575	30	575	30	575	48	575	30	575	48	566	31	575	20	566	17
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 23 RESPONSES	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	575	11	583	21	551	20
	W	583	42	587	35	455	8	455	8	583	42	583	21	583	42	455	31	587	35	488	6
	R-1	595	43	587	53	595	40	587	53	587	53	595	40	587	53	587	11	587	53	574	15
	R-2	575	12	587	35	587	18	455	8	455	4	587	18	583	21	478	5	583	10	499	6
	G-1	551	5	583	10	551	10	574	5	595	12	551	10	583	21	574	5	583	21	566	25
	G-2	583	10	583	42	583	10	583	10	583	42	583	21	583	42	583	10	583	42	574	5
	Y-1	583	42	587	35	583	21	583	21	587	35	583	42	566	17	478	11	583	42	492	3
	Y-2	583	42	583	62	587	35	586	16	583	42	583	21	587	35	499	3	583	62	488	12
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 24 RESPONSES	W	583	42	583	42	583	42	583	21	583	42	583	42	583	42	575	11	583	42	551	13
	W	587	35	595	27	566	17	566	17	583	42	595	27	595	27	566	35	582	24	499	6
	R-1	587	62	595	40	595	40	595	27	587	53	595	40	587	53	587	18	595	40	551	43
	R-2	595	12	587	35	587	18	587	35	583	42	583	10	583	42	566	35	575	6	574	9
	G-1	574	5	583	21	551	10	574	5	595	12	551	10	583	21	551	20	587	18	566	35
	G-2	583	42	583	62	583	01	583	10	583	42	583	21	583	42	583	10	583	42	566	35
	Y-1	583	42	587	35	587	35	574	21	575	27	583	42	582	24	583	21	582	16	492	3
	Y-2	587	35	595	27	583	42	583	21	575	27	587	35	595	27	499	3	612	18	574	15
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 25 RESPONSES	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17
	W	612	18	566	24	566	16	566	16	566	24	582	24	582	16	587	10	582	16	566	8
	R-1	587	53	587	53	587	35	583	42	587	53	587	53	587	53	583	42	587	53	566	54
	R-2	595	16	587	35	587	8	587	11	566	17	587	8	587	35	566	35	575	27	574	5
	G-1	488	7	587	18	595	12	595	12	587	18	488	6	583	21	595	18	583	10	583	42
	G-2	583	21	583	21	583	31	583	21	583	21	583	21	583	21	583	21	583	21	592	32
	Y-1	583	21	582	16	587	18	586	16	586	24	583	21	582	32	[illegible]	8	582	24	551	5
	Y-2	583	21	612	18	595	27	612	18	583	21	583	42	[illegible]	16	[illegible]	8	582	16	551	5

TABLE 54

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 9

PROJ.PR. No. 26 — AMB. ILL. / RESPONSES

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	583	10	583	10	583	[illegible]	583	42	583	10	583	10	583	10	583	42	583	10	595	27
W	583	21	486	13	561c	17	561c	24	486	25	561c	24	486	25	561c	31	486	25	595	6
R-1	587	53	587	35	587	53	587	35	587	35	587	53	587	35	583	42	587	53	551	10
R-2	595	40	455	17	595	27	455	17	566	35	595	27	478	11	575	27	595	6	566	8
G-1	492	3	551	5	566	17	587	18	587	18	612	9	583	10	587	35	551	10	587	53
G-2	583	43	583	10	583	42	583	42	583	10	583	21	583	21	583	42	583	21	595	40
Y-1	583	42	487	24	486	25	583	21	486	25	587	35	486	13	532c	32	486	7	587	8
Y-2	583	42	486	25	532c	16	532c	16	486	25	532c	24	486	25	612	28	486	26	612	4
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. 27 — AMB. ILL. / RESPONSES

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	532c	4	532c	4	532c	4	532c	4	532c	4	532c	4	532c	4	532c	4	532c	4	532c	4
W	583	21	478	11	561c	8	561c	17	478	11	561c	24	478	11	561c	8	455	17	587	8
R-1	587	53	587	35	587	35	587	35	587	35	587	53	587	35	587	35	587	35	566	17
R-2	595	27	566	8	595	27	566	8	566	17	595	27	455	8	575	12	595	6	551	5
G-1	488	6	583	21	583	21	583	21	587	16	574	2	551	5	587	8	551	10	583	42
G-2	587	18	587	8	587	18	587	8	587	8	587	18	581	8	587	35	587	8	587	8
Y-1	595	27	488	6	612	16	532c	16	488	6	532c	24	488	6	532c	16	587	35	583	10
Y-2	583	21	488	12	532c	16	532c	16	488	12	532c	16	551	5	532c	16	532c	17	587	8
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. — AMB. ILL. / RESPONSES

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	White	

PROJ.PR. No. — AMB. ILL. / RESPONSES

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	white	

PROJ.PR. No. — AMB. ILL. / RESPONSES

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				

TABLE 55

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

Proj. Pr.	Amb. Ill.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
PROJ. PR. No. 1 (RESPONSES)	W	575	31	575	18	575	30	575	30	575	18	575	30	575	30	575	11	575	30	478	22
	W	575	48	532	24	532	24	575	30	532	24	532	16	532	24	572	32	532	24	478	22
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	566	8	587	53	566	17
	R-2	583	42	455	4	566	4	583	21	566	17	583	42	583	21	575	30	566	8	478	22
	G-1	566	8	551	5	572	17	575	11	575	18	575	30	581	8	575	11	583	10	481	24
	G-2	575	48	583	42	575	30	575	30	583	67	575	30	575	30	455	24	575	18	455	31
	Y-1	575	61	532	24	575	61	575	61	532	24	575	61	575	61	572	32	566	24	478	22
	Y-2	575	48	575	30	575	48	575	48	532	16	575	61	575	48	572	32	575	48	455	24
Chip		587	67	499	27	580	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
PROJ. PR. No. 2 (RESPONSES)	W	575	30	575	30	575	30	575	30	575	30	575	30	575	30	572	32	575	30	481	24
	W	575	61	532	16	532	24	532	16	532	24	572	47	532	32	572	32	532	24	478	22
	R-1	575	40	575	40	575	40	575	40	575	41	575	40	575	40	566	17	575	40	566	24
	R-2	583	42	566	17	583	21	583	42	566	17	566	8	583	42	575	30	566	24	481	24
	G-1	572	17	574	2	583	21	583	10	499	6	566	17	566	17	572	11	583	10	481	24
	G-2	575	48	583	62	583	62	583	42	587	53	575	48	587	53	478	22	587	53	478	32
	Y-1	575	61	532	24	575	48	532	24	532	32	575	61	532	32	572	32	566	24	478	22
	Y-2	575	48	566	17	575	48	575	30	566	17	575	61	575	48	572	32	575	61	455	24
Chip		587	67	499	27	580	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
PROJ. PR. No. 3 (RESPONSES)	W	575	18	575	11	575	18	575	18	575	11	575	18	575	18	572	17	575	18	455	24
	W	575	48	532	8	575	30	575	30	532	16	575	30	575	30	572	32	575	30	566	17
	R-1	583	42	575	40	575	27	575	27	575	40	575	27	575	27	575	30	575	27	566	24
	R-2	583	42	455	8	583	42	455	17	455	17	583	42	455	8	575	30	583	42	455	17
	G-1	566	17	574	5	566	17	551	10	499	6	566	35	566	8	572	11	551	10	532	24
	G-2	575	30	583	10	575	30	575	30	583	10	575	30	583	10	575	18	583	10	532	24
	Y-1	575	61	566	24	575	48	575	48	566	24	575	61	575	30	566	17	575	30	566	17
	Y-2	575	48	566	24	575	30	575	30	566	17	575	48	575	30	572	17	575	30	566	24
Chip		587	67	499	27	580	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
PROJ. PR. No. 4 (RESPONSES)	W	572	32	572	17	572	32	572	32	572	17	572	32	572	17	572	11	572	17	566	24
	W	572	60	532	16	572	47	572	32	532	24	572	47	532	16	575	27	532	16	532	32
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	532	24	575	40	532	32
	R-2	575	40	566	8	575	27	566	8	455	17	575	27	566	17	575	40	566	8	532	24
	G-1	566	17	574	5	566	17	566	8	574	5	566	35	581	5	575	11	551	5	478	22
	G-2	575	30	575	18	575	30	575	30	575	18	575	30	575	30	566	31	575	18	532	32
	Y-1	575	61	575	30	575	48	575	30	575	30	575	61	575	48	575	54	575	48	566	31
	Y-2	575	61	575	30	575	61	575	30	575	30	575	61	575	30	575	54	575	30	532	32
Chip		587	67	499	27	580	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
PROJ. PR. No. 5 (RESPONSES)	W	572	47	572	17	572	32	572	47	572	32	572	32	572	47	572	17	572	32	566	24
	W	572	47	572	32	572	47	572	47	572	32	551	31	572	32	575	12	572	32	532	32
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	476	15	575	40	486	22
	R-2	575	54	583	42	575	40	583	42	583	10	575	30	575	27	455	4	575	27	566	31
	G-1	566	35	532	10	572	32	566	35	574	5	572	32	566	17	572	11	566	8	532	24
	G-2	572	32	572	17	572	32	572	32	572	17	572	32	572	17	566	24	572	17	566	31
	Y-1	575	61	572	32	572	47	575	48	572	32	575	48	572	32	575	27	572	47	566	31
	Y-2	575	61	575	48	575	61	575	48	575	48	575	61	575	48	583	48	575	48	532	32

TABLE 56

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	572	32	572	17	572	32	572	32	572	17	572	32	572	17	572	17	572	17	455	17
	W	575	48	575	30	575	48	575	48	572	32	572	47	572	17	566	8	572	17	566	17
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	572	17	587	53	566	24
	R-2	583	62	455	17	583	42	455	8	455	17	583	42	455	17	572	32	455	17	455	17
	G-1	566	17	551	10	566	8	566	8	551	10	566	35	566	8	572	11	566	17	566	24
	G-2	572	47	572	32	572	47	572	47	572	[illegible]	572	47	572	32	566	24	572	32	566	24
	Y-1	575	61	575	30	575	61	575	61	575	48	575	61	575	48	572	32	575	48	566	31
	Y-2	575	61	575	48	575	61	575	30	575	48	575	61	575	30	575	30	575	61	566	31
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
7	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	551	5	583	42	551	31
	W	595	40	595	27	595	40	595	40	595	54	595	40	595	40	551	5	612	18	499	18
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	587	35	595	40	551	43
	R-2	595	27	587	35	587	18	587	35	583	42	587	18	587	35	575	30	587	35	499	13
	G-1	583	10	595	12	595	12	587	8	583	10	587	18	612	9	575	11	587	18	551	31
	G-2	587	53	587	53	587	53	587	53	587	53	587	53	587	35	574	5	587	35	574	15
	Y-1	587	35	583	42	587	53	587	53	587	35	595	27	595	27	566	8	595	27	499	13
	Y-2	587	35	595	27	587	35	595	27	587	35	587	53	595	27	566	8	595	22	492	27
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
8	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	572	17	583	21	551	10
	W	595	27	455	17	566	24	566	24	498	15	498	22	566	17	566	8	566	17	499	6
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	587	35	595	40	551	31
	R-2	595	27	587	35	587	18	583	42	583	42	595	27	595	27	595	48	595	27	499	6
	G-1	587	8	587	8	583	10	587	5	551	10	587	18	566	8	572	17	566	8	566	35
	G-2	583	42	583	21	583	42	583	42	583	[illegible]	583	42	583	21	566	35	583	21	566	54
	Y-1	587	35	583	42	595	27	595	27	612	18	612	18	612	18	566	8	612	18	492	3
	Y-2	587	35	583	42	595	27	587	35	587	18	595	27	577	35	540	32	587	35	499	6
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
9	W	551	5	551	5	551	5	551	5	551	5	551	5	551	5	551	5	551	5	551	5
	W	595	27	566	4	566	17	566	8	486	3	566	24	486	25	566	24	486	25	498	6
	R-1	587	8	587	8	587	8	587	8	587	8	587	8	587	8	575	30	587	8	551	5
	R-2	486	15	478	5	455	11	478	5	476	5	595	27	455	4	575	18	455	4	498	6
	G-1	551	5	574	9	551	5	551	10	574	9	583	10	551	10	575	18	566	17	572	32
	G-2	583	21	583	10	583	31	583	31	583	[illegible]	583	31	583	10	566	8	583	10	566	8
	Y-1	583	42	566		612	18	612	16	566	8	612	18	598	16	595	27	587	35	498	6
	Y-2	583	21	486	25	583	21	486	25	486	25	583	42	486	25	595	40	587	35	486	13
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
10	W	583	10	583	10	583	10	583	10	583	16	583	16	583	10	583	16	583	10	551	5
	W	595	27	583	21	595	27	587	35	587	35	595	27	595	27	595	18	566	17	498	12
	R-1	587	35	587	35	587	35	587	35	587	35	587	35	566	8	583	42	566	8	566	8
	R-2	595	12	583	42	566	4	566	8	566	4	595	27	587	35	587	8	587	1	498	6
	G-1	551	5	574	5	551	5	551	10	551	10	583	10	551	10	572	11	566	17	551	20
	G-2	583	42	583	10	572	32	572	32	583	10	583	42	583	10	499	6	583	21	499	6
	Y-1	595	27	583	21	595	27	595	27	587	35	595	27	595	27	612	9	595	27	486	7
	Y-2	587	35	583	21	587	35	595	27	587	18	583	42	583	21	595	27	583	42	486	13

TABLE 57

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ.PR. No. 11	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	499	3
RESPONSES	W	595	27	492	12	595	27	612	18	595	27	595	40	612	18	612	18	612	18	486	13
AMB. ILL.	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	587	35	587	53	551	31
	R-2	595	27	587	35	595	40	587	35	566	8	595	27	595	27	572	32	587	35	481	6
	G-1	587	8	551	10	583	21	583	10	551	10	587	18	551	10	572	17	551	5	551	20
	G-2	583	42	583	21	572	32	583	42	583	21	583	42	583	21	574	5	583	21	514	5
	Y-1	612	18	595	27	583	42	587	35	587	35	595	27	595	27	583	21	587	27	481	12
	Y-2	583	21	583	42	587	35	587	18	583	42	587	35	587	18	583	21	612	18	486	13
Chip		507	67	499	27	561o	31	455	33	492	36	612	37	[illegible]	37	575	61	551	40	[illegible]	
PROJ.PR. No. 12	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	572	32	583	21	566	35
RESPONSES	W	595	27	492	15	612	18	612	18	532	16	492	22	532	16	612	6	492	15	574	5
AMB. ILL.	R-1	492	26	492	26	492	26	492	26	492	26	492	26	492	26	492	12	492	26	566	54
	R-2	492	15	595	27	595	12	595	27	587	35	595	40	585	27	572	32	595	40	551	10
	G-1	583	21	551	10	583	10	583	10	566	17	587	18	566	17	572	17	566	8	566	54
	G-2	587	53	587	35	587	53	587	53	587	35	587	53	587	35	566	54	587	35	566	54
	Y-1	595	27	566	8	583	27	612	18	595	27	612	21	595	27	566	8	595	27	574	9
	Y-2	583	42	595	12	587	35	583	42	583	42	612	18	612	18	566	17	612	18	574	9
Chip		507	67	499	27	561o	31	455	33	492	36	612	37	[illegible]	37	575	61	551	40	[illegible]	
PROJ.PR. No. 13	W	583	21	583	10	583	21	583	21	583	10	583	21	583	10	575	30	583	10	566	17
RESPONSES	W	612	18	574	5	612	18	612	18	574	5	612	18	492	5	566	17	492	15	574	2
AMB. ILL.	R-1	612	28	612	28	612	28	612	28	612	28	612	28	612	28	612	28	612	28	551	5
	R-2	595	54	478	5	595	40	595	40	478	5	595	40	595	40	583	42	492	15	514	5
	G-1	587	18	551	10	587	8	583	10	551	10	583	21	551	20	575	30	566	8	572	47
	G-2	587	35	587	8	587	35	587	35	587	8	587	53	587	8	572	11	587	8	572	32
	Y-1	595	27	551	5	595	27	612	18	551	5	595	27	551	5	595	27	612	18	551	5
	Y-2	583	21	499	3	587	18	583	21	499	3	587	18	499	3	587	35	583	21	551	10
Chip		507	67	499	27	561o	31	455	33	492	36	612	37	[illegible]	37	575	61	551	40	[illegible]	
PROJ.PR. No. 14	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	21	566	17
RESPONSES	W	595	27	532	16	532	24	532	24	595	27	532	16	532	24	612	9	532	24	492	3
AMB. ILL.	R-1	612	28	612	28	612	28	612	28	612	28	612	28	612	28	612	28	612	28	551	20
	R-2	595	27	551	10	595	12	595	40	551	10	595	27	595	40	575	30	595	27	574	2
	G-1	587	18	551	10	587	8	566	17	551	10	583	21	566	17	572	17	551	10	566	54
	G-2	587	53	587	18	587	35	587	35	587	18	587	35	551	18	587	35	587	35	551	20
	Y-1	595	40	587	35	595	27	595	27	587	35	595	40	612	28	566	8	612	28	551	10
	Y-2	583	42	587	18	595	27	587	18	612	18	612	18	595	27	583	21	612	18	499	13
Chip		507	67	499	27	561o	31	455	33	492	36	612	37	[illegible]	37	575	61	551	40	[illegible]	
PROJ.PR. No. 15	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	575	30	583	42	551	20
RESPONSES	W	595	27	612	18	612	18	612	18	492	12	595	27	612	18	612	9	612	18	499	6
AMB. ILL.	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	587	35	595	40	551	43
	R-2	595	40	587	35	595	27	587	35	551	5	595	40	595	37	575	30	595	40	551	10
	G-1	587	8	551	10	583	10	583	10	551	10	583	21	551	10	575	18	551	10	566	54
	G-2	583	62	583	21	583	62	583	42	583	21	583	62	583	62	583	10	583	62	551	31
	Y-1	595	40	587	35	595	40	595	40	587	35	595	27	595	27	566	8	612	18	499	6
	Y-2	587	35	583	42	587	35	583	21	583	42	587	35	612	18	583	42	595	27	499	18

TABLE 58

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	62	583	11	583	62
	W	583	21	455	8	455	17	455	17	478	22	566	17	455	17	612	4	455	17	587	8
	R-1	575	27	575	27	575	27	575	27	575	27	575	40	575	27	575	12	575	27	572	32
	R-2	575	12	478	5	575	12	478	5	478	5	575	12	478	5	566	35	478	5	566	17
	G-1	566	8	551	5	574	2	574	5	551	5	575	6	566	8	583	42	566	8	583	78
	G-2	575	6	575	6	575	4	575	6	575	6	575	6	575	6	583	62	575	6	583	42
	Y-1	575	27	566	17	566	24	566	17	566	8	566	8	575	27	566	35	566	17	587	8
	Y-2	586	8	488	6	586	8	586	8	488	6	586	16	488	6	575	12	488	6	583	10
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
17	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32	572	11	572	32
	W	566	8	566	17	566	17	566	17	455	17	566	17	566	17	566	24	455	17	583	10
	R-1	575	54	575	40	575	54	575	40	575	40	575	54	575	40	575	27	575	40	572	17
	R-2	587	18	455	4	587	8	455	4	566	17	587	8	587	8	478	5	587	8	566	8
	G-1	488	6	612	9	492	3	492	6	575	6	492	3	486	7	575	18	551	5	583	62
	G-2	566	4	566	4	566	4	566	4	566	4	566	4	566	4	575	18	566	4	575	30
	Y-1	587	35	455	8	566	24	566	31	455	17	566	24	566	31	575	6	566	31	586	8
	Y-2	583	21	586	8	566	8	566	17	499	3	566	17	499	3	575	6	[illegible]	16	572	32
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
18	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17	583	11	572	17
	W	612	18	492	12	492	12	492	12	492	12	612	18	612	18	612	9	492	12	566	8
	R-1	575	54	575	40	575	54	575	40	575	40	575	54	575	40	587	35	575	40	[illegible]	20
	R-2	575	12	587	35	575	12	587	18	587	35	575	6	587	18	566	35	587	18	566	17
	G-1	486	7	497	12	478	5	486	7	566	8	486	7	612	4	575	18	499	3	583	42
	G-2	492	4	492	4	492	4	492	4	492	4	492	4	492	4	572	4	492	4	572	32
	Y-1	575	42	586	16	586	17	586	16	586	24	586	17	586	24	566	8	586	16	566	8
	Y-2	587	18	566	17	566	24	566	24	566	17	566	24	566	24	566	4	566	24	566	8
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
19	W	575	12	575	17	575	12	575	12	575	12	575	12	575	12	575	12	575	12	575	40
	W	455	4	455	8	455	17	455	17	455	17	455	4	478	11	455	24	—		612	24
	R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	54
	R-2	587	8	575	6	587	8	455	4	455	4	612	37	566	4	478	5	455	4	612	37
	G-1	574	5	574	5	551	10	551	10	499	3	574	2	551	5	572	17	551	5	575	54
	G-2	575	27	575	27	575	12	575	27	575	27	575	12	575	12	575	40	575	12	575	54
	Y-1	455	8	566	17	455	8	455	17	455	17	—		455	8	499	24	455	4	575	54
	Y-2	583	10	455	17	455	8	583	10	455	17	—		455	8	455	17	455	4	575	40
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
20	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	572	11	583	10	575	12
	W	455	8	478	11	478	22	478	22	455	8	455	4	455	24	455	24	455	17	575	12
	R-1	575	12	575	12	575	12	575	12	575	12	575	12	575	12	572	11	575	12	572	17
	R-2	455	4	566	4	455	4	455	4	575	12	566	4	566	4	486	35	566	4	575	6
	G-1	551	5	575	12	566	8	574	2	575	12	574	5	551	10	572	17	566	8	587	53
	G-2	575	6	575	6	575	6	575	6	575	6	575	6	575	6	583	27	575	6	575	27
	Y-1	455	8	566	17	478	22	478	32	566	17	455	4	566	17	486	35	566	24	575	27
	Y-2	488	6	586	13	488	6	566	8	586	8	488	6	486	7	486	35	488	6	575	27

TABLE 59

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
21	W	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	4
	W	478	8	455	8	455	17	455	17	455	17	455	24	455	24	455	17	566	17	595	6
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	566	8	595	27	566	8
	R-2	566	4	583	21	566	4	455	4	455	4	—		566	4	478	11	566	4	538	4
	G-1	551	5	574	5	574	2	574	2	581	8	551	5	583	10	575	11	566	8	583	42
	G-2	566	4	566	4	566	4	566	4	566	4	566	4	566	4	566	17	566	4	566	17
	Y-1	551	5	566	17	455	8	566	17	551	5	538	16	538	16	481	24	538	8	595	6
	Y-2	486	13	566	17	566	8	566	17	566	17	486	25	566	24	486	25	486	7	595	6
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
22	W	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	11	572	17	566	17
	W	515	30	515	48	515	30	515	30	515	30	515	18	515	48	566	31	575	30	566	24
	R-1	595	40	595	27	595	40	595	27	595	27	595	40	595	27	538	16	595	27	455	24
	R-2	455	24	583	42	589	18	583	42	583	42	455	17	583	42	455	24	583	42	455	24
	G-1	574	2	575	18	566	8	566	8	572	17	566	8	566	17	538	8	566	17	566	17
	G-2	575	18	575	18	575	18	575	8	575	18	575	18	575	18	566	17	575	18	566	24
	Y-1	575	48	575	61	575	48	575	61	575	61	575	30	575	61	566	31	575	48	566	24
	Y-2	583	42	575	48	583	42	575	30	575	48	583	21	575	30	566	31	583	42	566	24
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
23	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	574	2	583	10	574	2
	W	583	42	587	35	583	42	583	42	583	42	587	35	587	35	481	24	595	37	458	6
	R-1	587	53	587	53	587	53	587	53	587	53	589	53	587	53	583	42	587	53	551	20
	R-2	492	4	583	42	492	4	583	42	583	42	595	27	583	21	587	35	583	21	574	5
	G-1	551	10	583	21	583	10	583	10	581	8	499	3	583	10	575	11	583	10	551	20
	G-2	583	21	583	42	583	21	583	42	583	42	583	21	583	21	499	6	583	21	499	6
	Y-1	583	21	587	35	583	42	583	42	587	35	583	42	538	24	587	35	538	16	488	6
	Y-2	583	42	587	35	587	35	587	18	587	35	583	21	612	18	488	12	612	18	488	12
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
24	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	566	8	583	42	566	17
	W	587	35	595	27	587	35	595	27	595	27	612	18	612	18	566	17	612	28	574	2
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	583	42	595	40	551	42
	R-2	587	35	587	53	587	35	587	53	583	42	583	21	587	35	572	32	583	42	574	20
	G-1	551	10	583	10	587	8	566	8	587	18	551	10	583	10	572	17	583	21	566	35
	G-2	583	42	583	62	583	62	583	42	583	42	583	42	583	42	566	35	583	42	566	54
	Y-1	583	42	587	35	595	27	595	27	587	35	595	27	595	27	566	8	595	27	492	3
	Y-2	583	42	587	18	589	42	583	42	587	35	583	42	595	27	492	9	612	18	499	6
Chip		587	67	499	27	561	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
26	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	W	595	48	583	42	587	35	595	27	587	35	595	27	595	27	566	8	612	18	566	8
	R-1	595	40	595	40	595	40	595	40	595	40	595	41	595	40	595	12	595	40	551	31
	R-2	587	18	566	4	587	18	538	8	587	35	595	12	595	27	572	32	595	27	566	8
	G-1	551	5	574	5	574	2	574	2	488	12	492	9	551	5	572	17	566	8	583	42
	G-2	595	6	595	6	595	6	575	6	595	6	575	6	595	6	575	18	595	6	575	30
	Y-1	587	27	538	16	587	35	587	35	587	18	583	21	583	42	538	16	587	35	551	5
	Y-2	583	21	587	18	587	35	566	8	587	18	587	35	566	17	488	12	566	16	551	5

TABLE 60

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 10

PROJ.PR. No. 26		1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
AMB. ILL.	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	42	583	10	583	42
	W	583	21	498	22	455	8	455	8	455	24	455	8	455	8	595	27	455	17	595	6
	R-1	583	10	583	10	583	10	583	10	583	10	583	10	583	10	572	11	583	10	572	11
	R-2	595	27	455	4	566	4	455	4	478	5	595	27	486	4	566	4	538	4	595	6
	G-1	587	8	551	5	574	2	574	5	574	5	499	6	566	8	583	21	566	8	587	53
	G-2	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	27	595	12	595	40
	Y-1	583	42	566	8	595	27	538	16	566	8	583	42	455	17	538	16	455	17	587	8
	Y-2	583	16	498	23	583	21	498	12	498	23	583	21	498	6	566	17	[illegible]	6	595	6
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. 27		1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
AMB. ILL.	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11
	W	612	18	566	17	566	8	566	8	566	24	566	17	538	16	566	24	538	24	[illegible]	[illegible]
	R-1	587	53	587	35	587	35	587	35	587	35	587	53	587	35	587	18	587	35	566	8
	R-2	595	27	538	8	538	4	538	8	478	5	595	27	566	4	551	5	455	4	551	5
	G-1	551	5	574	5	574	2	574	5	574	5	498	3	566	8	572	32	566	17	587	35
	G-2	538	4	538	4	538	4	538	4	538	4	538	4	538	4	566	8	538	4	566	8
	Y-1	[illegible]	21	551	5	583	21	587	35	587	5	587	11	583	21	587	35	583	21	498	7
	Y-2	583	21	551	5	566	17	587	5	551	10	583	21	566	24	566	17	566	24	612	4
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No.																					
AMB. ILL.	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	White	

PROJ.PR. No.																					
AMB. ILL.	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	White	

PROJ.PR. No.																					
AMB. ILL.	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				

TABLE 61

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 11

			1		2		3		4		5		6		7		8		9		back	
			λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ.PR. No. 1	AMB. ILL.	W	575	30	583	42	575	30	575	30	583	42	575	30	583	42	481	36	583	42	481	36
	RESPONSES	W	575	48	595	54	575	30	595	40	595	54	575	48	595	40	572	32	595	40	481	36
		R-1	583	62	587	53	583	62	583	62	587	53	583	62	583	62	572	17	583	62	488	34
		R-2	583	42	538c	16	583	42	583	42	538c	16	583	62	538c	16	575	30	538c	8	481	36
		G-1	566	17	583	21	566	17	566	8	538c	8	566	35	475	5	572	11	587	18	488	23
		G-2	575	48	587	53	575	48	575	30	587	53	575	48	587	35	575	30	587	53	481	36
		Y-1	575	61	595	54	575	61	595	40	595	54	575	61	575	54	572	32	595	54	477	32
		Y-2	575	48	498c	30	583	62	498c	22	498c	30	575	48	498c	30	572	32	498c	22	481	36
Chip			587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 2	AMB. ILL.	W	575	48	587	53	575	48	575	48	587	53	575	48	587	53	499	13	587	54	481	23
	RESPONSES	W	575	48	595	54	575	48	595	40	595	54	572	32	595	40	572	32	595	40	486	25
		R-1	587	53	595	54	587	53	587	53	595	40	587	54	492c	19	572	47	492c	19	492c	36
		R-2	587	35	561c	17	587	35	587	18	561c	24	583	42	561c	17	572	32	561c	17	486	25
		G-1	566	17	561c	17	566	17	566	17	538c	8	572	32	561c	8	572	11	492c	5	486	25
		G-2	575	48	595	54	575	48	595	40	595	54	575	48	575	40	572	32	595	40	486	37
		Y-1	575	48	595	54	575	45	575	48	595	54	575	61	595	54	572	32	595	40	478	41
		Y-2	583	62	498c	30	583	62	498c	22	498c	30	575	48	498c	30	572	17	498c	30	486	37
Chip			587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 3	AMB. ILL.	W	575	18	583	42	575	18	583	21	583	42	575	21	583	21	572	17	583	42	561c	17
	RESPONSES	W	575	30	561c	21	575	30	575	30	561c	24	575	30	561c	24	572	17	561c	24	561c	8
		R-1	587	53	498c	30	587	53	587	40	498c	30	587	53	498c	22	575	30	498c	22	499	13
		R-2	587	18	561c	24	587	30	587	35	561c	17	583	62	455	24	575	30	455	24	455	8
		G-1	566	17	481	34	566	35	566	17	481	[illegible]	[illegible]	25	486	13	572	17	499	9	492c	19
		G-2	583	21	587	35	583	40	583	40	587	[illegible]	[illegible]	[illegible]	583	42	572	47	583	42	538c	32
		Y-1	575	61	538c	32	575	61	538c	24	538c	32	575	61	538c	32	572	32	538c	24	561c	17
		Y-2	575	30	561c	31	575	30	561c	24	561c	31	575	30	561c	31	572	32	561c	31	455	17
Chip			587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 4	AMB. ILL.	W	572	17	572	11	572	17	572	11	572	11	572	17	572	17	572	32	572	11	538c	24
	RESPONSES	W	595	40	455	24	595	40	455	24	455	31	595	27	455	17	595	27	455	17	538c	32
		R-1	587	53	587	18	587	53	587	53	587	18	587	53	587	35	492c	19	587	35	538c	24
		R-2	595	40	455	4	575	27	595	21	561c	4	575	40	561c	4	498c	30	561c	4	538c	32
		G-1	572	32	481	6	566	17	566	17	481	12	572	32	478	5	583	42	572	[illegible]	612	37
		G-2	575	30	583	10	575	30	575	30	583	10	575	18	583	10	498c	22	583	10	498c	30
		Y-1	575	61	561c	24	575	48	561c	24	561c	24	575	61	561c	31	612	50	561c	24	538c	32
		Y-2	587	35	455	24	583	42	455	24	455	31	583	62	455	31	575	54	455	31	538c	32
Chip			587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 5	AMB. ILL.	W	572	32	572	17	572	17	572	17	572	17	572	32	572	17	538c	16	572	17	538c	10
	RESPONSES	W	572	47	455	17	572	32	572	32	455	17	572	32	455	24	498c	4	455	17	498c	30
		R-1	587	53	587	35	587	53	587	53	587	35	587	53	587	35	595	27	587	35	538c	32
		R-2	595	27	455	4	595	12	595	12	455	4	595	6	455	4	595	27	455	4	538c	32
		G-1	566	17	574	5	572	17	551	10	414	5	572	32	574	5	572	11	551	10	492c	19
		G-2	572	60	498c	15	572	47	572	17	498c	15	572	32	572	32	538c	24	572	17	538c	32
		Y-1	575	61	575	30	575	61	575	30	575	30	575	61	575	30	612	46	575	61	538c	32
		Y-2	575	48	455	24	575	61	455	17	455	31	575	61	455	24	595	54	455	24	538c	32

TABLE 62

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 11

PROJ. PR.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 6 (RESPONSES)	W	572	1[illegible]	572	11	572	17	572	17	572	11	572	17	572	11	572	11	572	11	566	8
	W	575	48	575	30	575	30	575	30	566	24	575	48	575	30	566	8	575	30	566	17
	R-1	587	53	587	68	587	53	581	53	581	68	587	53	587	68	575	30	587	68	492	27
	R-2	583	42	566	8	583	42	583	42	566	17	583	62	566	24	575	30	566	8	481	24
	G-1	566	17	574	2	566	35	566	8	444	6	566	17	492	3	572	17	551	10	446	15
	G-2	572	17	572	11	572	17	572	17	572	11	572	17	572	17	[illegible]	24	572	17	566	24
	Y-1	575	61	536	24	575	61	575	48	536	24	575	61	546	24	492	32	536	32	566	8
	Y-2	575	30	566	24	575	30	575	30	566	24	575	48	561	24	572	17	561	17	495	17
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 7 (RESPONSES)	W	583	62	583	62	583	62	[illegible]	[illegible]	[illegible]	[illegible]	583	62	583	62	551	10	583	62	574	15
	W	587	35	575	27	595	27	595	27	595	27	595	27	595	27	566	6	595	27	499	20
	R-1	587	53	587	68	587	53	581	53	587	68	587	53	587	68	566	54	587	68	551	43
	R-2	583	42	583	21	583	21	583	21	583	10	583	42	575	27	572	32	575	27	574	20
	G-1	583	21	583	10	577	8	577	8	577	8	583	10	583	10	572	11	587	18	566	54
	G-2	587	53	587	68	587	53	587	53	587	53	587	53	587	53	551	31	587	53	551	43
	Y-1	573	62	612	28	587	53	595	40	612	28	587	35	595	40	566	8	595	40	574	15
	Y-2	575	27	587	35	595	27	595	27	595	27	587	35	612	18	572	17	612	18	574	15
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 8 (RESPONSES)	W	583	42	583	42	583	42	583	42	573	42	583	42	583	42	575	11	583	42	572	17
	W	587	35	583	42	587	35	587	35	583	42	587	35	583	42	566	8	587	35	551	10
	R-1	587	53	587	68	587	53	581	53	587	68	587	53	587	68	566	54	587	68	551	43
	R-2	595	12	575	6	583	42	583	21	575	6	583	62	575	27	566	35	575	27	551	20
	G-1	581	18	574	5	583	21	574	9	499	6	595	12	492	3	572	32	514	2	575	48
	G-2	581	35	587	18	587	35	587	35	587	18	581	35	581	[illegible]	572	17	581	18	572	32
	Y-1	587	35	595	27	583	42	595	27	612	18	587	35	612	18	566	5	595	27	514	9
	Y-2	587	35	587	18	595	27	587	35	612	18	595	27	612	11	572	17	612	18	587	20
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 9 (RESPONSES)	W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	583	42	595	6	595	27
	W	612	18	486	25	612	18	486	13	486	25	595	27	486	25	612	4	486	25	595	12
	R-1	587	35	587	18	587	35	587	18	587	18	587	35	587	18	572	17	587	18	551	5
	R-2	595	40	486	25	595	40	486	25	486	25	595	40	486	25	595	27	486	25	595	6
	G-1	595	10	574	9	551	10	574	5	574	5	587	18	574	5	587	35	551	20	587	68
	G-2	595	27	595	6	595	27	595	12	595	6	595	27	595	12	595	27	595	12	595	40
	Y-1	595	27	486	25	583	42	486	25	486	37	538	24	486	37	595	37	486	25	595	27
	Y-2	538	16	486	25	486	13	486	25	486	37	538	24	486	25	587	35	486	25	612	18
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 10 (RESPONSES)	W	583	10	574	2	574	2	574	2	574	2	583	10	574	2	572	11	574	2	566	4
	W	492	12	486	13	492	12	612	18	486	13	612	18	486	13	612	4	492	12	488	12
	R-1	587	53	587	35	587	53	587	35	587	18	587	53	587	18	587	18	587	8	566	8
	R-2	595	27	478	5	595	27	478	5	475	5	595	27	478	5	595	40	566	17	492	4
	G-1	583	10	574	9	583	10	551	10	574	4	577	18	551	10	595	18	551	20	575	18
	G-2	587	35	566	8	566	8	551	5	566	8	587	18	551	5	566	8	551	5	566	8
	Y-1	583	42	481	12	587	35	481	12	481	24	595	27	481	12	595	12	481	12	486	6
	Y-2	595	12	486	13	612	9	486	13	486	25	595	27	486	25	587	35	486	25	486	7

TABLE 63

Wavelength (λ) and Excitation Purity (Pe); Narrowband Slide Pair 11

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11 RESPONSES	W	573	42	583	21	573	42	573	42	573	21	573	42	573	21	575	11	583	24	499	6
	W	577	35	498	12	612	18	612	18	498	12	575	37	612	18	566	8	[illegible]	18	498	9
	R-1	577	53	577	61	577	53	577	53	577	53	577	53	577	53	566	54	577	53	551	43
	R-2	575	27	575	12	575	27	575	27	575	27	575	40	575	27	575	30	575	40	499	3
	G-1	583	21	551	10	577	8	551	10	574	5	575	12	551	5	575	18	551	10	575	18
	G-2	575	42	571	10	583	42	583	21	573	10	583	42	583	21	566	8	578	21	566	8
	Y-1	577	35	583	42	575	27	573	42	573	42	573	42	577	35	488	18	575	27	488	6
	Y-2	573	42	577	18	575	27	577	35	571	18	575	27	612	18	575	6	612	18	488	12
Chip		587	67	499	27	5610	31	495	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
12 RESPONSES	W	573	42	583	42	573	42	583	42	583	42	573	62	573	42	575	30	573	42	566	35
	W	583	42	583	21	587	35	577	35	577	18	577	35	[illegible]	[illegible]	[illegible]	8	577	42	557	20
	R-1	577	53	577	61	577	53	587	53	577	61	577	53	577	[illegible]	566	54	577	61	551	43
	R-2	575	54	595	27	575	27	575	27	575	27	575	27	575	12	573	32	575	27	557	31
	G-1	577	18	574	5	583	21	583	10	551	10	575	12	574	5	575	30	574	2	575	48
	G-2	577	53	577	8	577	53	577	35	577	8	577	53	571	35	573	17	577	35	572	47
	Y-1	583	62	583	42	577	53	[illegible]	[illegible]	[illegible]	[illegible]	573	42	612	18	566	8	575	27	557	20
	Y-2	577	35	583	42	573	42	583	42	583	42	575	27	583	42	566	8	573	42	557	31
Chip		587	67	499	27	5610	31	495	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
13 RESPONSES	W	573	10	566	17	583	10	573	10	566	17	575	12	566	17	566	35	566	17	575	30
	W	575	27	[illegible]	13	575	27	[illegible]	13	[illegible]	25	612	18	488	23	612	18	488	23	573	10
	R-1	[illegible]	40	[illegible]	27	575	40	575	27	575	27	575	40	575	12	566	8	575	12	566	35
	R-2	575	40	486	25	575	27	486	13	486	25	575	37	486	13	577	68	566	13	566	8
	G-1	612	9	551	20	575	12	583	21	574	9	577	8	574	5	573	62	551	10	573	62
	G-2	573	42	573	10	573	10	573	21	573	10	573	42	573	10	577	53	583	10	575	48
	Y-1	575	21	486	25	575	27	486	13	486	25	486	15	486	25	612	18	498	18	[illegible]	10
	Y-2	[illegible]	24	499	6	[illegible]	24	499	3	499	13	[illegible]	16	499	6	575	27	499	6	578	10
Chip		587	67	499	27	5610	31	495	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
14 RESPONSES	W	573	42	566	17	573	42	566	17	566	17	573	42	573	21	575	30	566	17	566	17
	W	612	18	486	13	612	18	612	9	486	25	612	18	488	12	575	27	488	6	551	5
	R-1	577	53	571	35	577	53	571	35	571	35	577	53	571	25	571	18	577	35	551	20
	R-2	575	27	498	5	575	27	478	5	478	11	575	37	575	27	583	62	575	7	574	2
	G-1	577	18	551	10	583	21	551	10	551	20	583	21	551	10	577	53	574	5	566	54
	G-2	583	62	566	17	583	62	583	10	583	21	573	42	566	17	577	53	566	17	572	32
	Y-1	575	27	566	8	612	18	575	27	566	8	575	27	566	8	575	27	612	18	574	2
	Y-2	583	62	498	6	583	42	583	21	488	6	583	62	488	6	577	35	488	6	498	3
Chip		587	67	499	27	5610	31	495	33	492	36	612	37	486	37	575	61	441	5	[illegible]	
15 RESPONSES	W	583	62	583	42	573	62	573	42	583	42	583	62	573	42	575	11	583	42	574	5
	W	577	35	573	42	583	42	583	42	571	18	571	35	498	42	566	8	583	42	488	6
	R-1	577	53	577	61	577	61	571	53	571	53	577	53	577	53	566	54	577	53	551	43
	R-2	[illegible]	8	566	4	[illegible]	8	566	16	566	16	566	8	566	4	575	30	566	4	574	5
	G-1	577	18	551	10	571	18	551	5	574	5	571	11	[illegible]	5	572	17	551	5	570	32
	G-2	577	35	557	8	571	35	571	18	577	8	557	[illegible]	571	8	566	17	577	8	[illegible]	35
	Y-1	573	42	577	35	575	27	574	27	577	35	574	27	612	18	566	16	573	35	499	9
	Y-2	577	35	573	42	575	27	612	18	577	35	612	18	612	18	575	6	612	18	574	9

TABLE 64

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 11

		1		2		3		4		5		6		7		8		9		back	
PROJ. PR. No.	AMB. ILL.	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
16 (RESPONSES)	W	583	[illegible]	[illegible]	[illegible]	583	[illegible]	583	10	551	5	583	10	551	5	583	42	551	5	583	42
	W	612	9	499	6	561c	17	499	6	499	13	561c	17	—		612	18	499	3	587	35
	R-1	587	68	587	35	587	53	587	53	587	18	587	53	587	18	575	30	587	18	572	32
	R-2	587	18	481	12	587	18	481	6	481	24	587	35	486	7	583	62	486	7	583	42
	G-1	587	8	551	10	575	6	583	10	551	10	583	21	551	[illegible]	587	35	574	5	587	68
	G-2	587	18	587	8	587	18	551	18	587	8	587	18	587	8	581	53	587	8	587	68
	Y-1	583	43	486	13	561c	17	561c	17	486	23	561c	24	486	25	561c	24	486	25	587	8
	Y-2	538c	16	499	13	538c	16	499	6	499	20	538c	24	499	13	538c	8	499	13	587	18
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
17 (RESPONSES)	W	583	21	551	5	583	21	[illegible]	2	551	5	583	10	551	5	583	42	551	5	583	42
	W	583	42	499	6	455	4	455	4	499	6	561c	17	455	4	561c	31	455	4	575	12
	R-1	587	53	587	35	587	53	587	35	587	35	581	53	587	35	575	30	587	35	572	32
	R-2	587	8	481	6	587	8	481	6	481	12	587	35	583	10	583	42	486	7	583	21
	G-1	551	5	574	5	574	9	551	10	492	9	583	21	551	5	583	42	551	10	583	62
	G-2	583	62	583	10	583	42	583	42	583	10	583	42	583	10	583	62	583	10	583	62
	Y-1	583	21	486	18	561c	24	561c	24	486	25	561c	24	486	13	575	27	486	13	583	10
	Y-2	561c	17	574	5	561c	24	574	2	574	9	561c	24	574	2	561c	8	574	2	587	18
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
18 (RESPONSES)	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17
	W	612	9	587	17	561c	8	561c	8	561c	17	561c	17	561c	24	561c	17	561c	24	486	7
	R-1	587	53	587	68	587	53	587	53	587	53	587	53	587	53	574	9	587	68	574	2
	R-2	575	27	575	12	575	12	575	27	575	6	575	12	575	27	572	17	575	27	551	10
	G-1	574	2	551	5	583	10	551	5	492	2	583	10	574	2	575	12	551	5	583	42
	G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17	572	11	583	32
	Y-1	583	31	583	42	561c	16	561c	16	561c	24	583	42	583	62	561c	17	583	42	486	7
	Y-2	583	21	583	10	561c	8	561c	8	583	31	561c	8	561c	24	561c	8	538c	24	561c	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
19 (RESPONSES)	W	575	6	575	6	575	6	575	[illegible]	575	[illegible]	575	6	575	[illegible]	575	21	575	6	583	40
	W	455	4	455	17	455	24	455	24	455	24	455	17	455	4	455	31	455	4	612	37
	R-1	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	27	575	54
	R-2	566	8	566	17	566	17	566	17	566	17	—		566	8	551	20	566	5	575	43
	G-1	574	5	499	6	492	9	492	3	583	10	574	2	551	10	575	12	551	10	575	54
	G-2	612	18	612	9	612	9	612	9	612	[illegible]	612	[illegible]	612	[illegible]	612	28	612	9	612	37
	Y-1	—		561c	8	455	4	455	4	455	8	—		455	4	561c	24	455	4	575	54
	Y-2	455	4	561c	17	551	5	612	9	612	9	455	4	561c	4	561c	17	561c	4	575	54
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
20 (RESPONSES)	W	551	5	583	10	551	5	551	5	583	10	551	5	583	10	583	11	583	10	561c	8
	W	455	24	561c	17	561c	24	561c	24	561c	13	486	25	561c	8	486	25	561c	17	575	6
	R-1	587	53	587	68	587	53	587	53	[illegible]	[illegible]	587	[illegible]	581	53	561c	17	481	53	551	10
	R-2	481	6	575	27	481	6	481	6	[illegible]	[illegible]	481	12	[illegible]	[illegible]	488	12	575	27	551	5
	G-1	551	10	575	16	574	2	574	2	583	[illegible]	551	10	551	5	572	17	587	8	575	27
	G-2	551	5	575	6	551	5	551	5	575	6	551	5	575	6	575	21	575	6	583	42
	Y-1	561c	17	538c	16	561c	17	561c	17	538c	16	561c	17	538c	16	499	12	538c	16	575	27
	Y-2	486	13	561c	24	486	13	561c	17	561c	24	486	25	561c	24	486	7	538c	24	612	4

TABLE 65

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 11

RESPONSES

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
21	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17
	W	455	8	536	16	455	17	455	17	536	16	478	22	538	16	486	13	566	24	481	6
	R-1	587	35	587	53	587	53	587	35	587	53	587	35	587	53	551	10	587	53	551	20
	R-2	455	4	612	18	455	4	455	4	612	9	481	6	566	4	566	17	575	12	574	2
	G-1	574	2	492	3	492	9	492	3	486	13	486	7	551	5	575	18	488	6	575	27
	G-2	573	10	573	10	573	10	573	10	573	10	573	10	573	10	572	11	573	10	572	11
	Y-1	566	8	538	16	551	5	538	16	612	18	566	8	538	16	486	13	538	16	575	6
	Y-2	481	12	566	17	536	16	538	16	536	24	481	12	536	16	486	7	538	24	575	6
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
22	W	575	18	575	30	575	18	575	18	575	30	575	30	575	30	455	24	575	30	455	24
	W	453	24	575	48	455	48	575	48	575	61	455	24	575	61	455	31	575	48	455	31
	R-1	587	53	573	62	587	53	587	53	573	62	587	53	573	62	566	24	573	62	455	24
	R-2	455	17	573	42	455	24	573	42	573	62	455	24	573	42	455	31	573	42	566	31
	G-1	492	3	566	35	574	2	574	5	566	35	499	6	566	35	478	17	566	35	566	24
	G-2	572	30	572	47	572	32	572	32	572	47	572	17	572	47	566	17	572	47	566	31
	Y-1	575	48	575	61	575	48	575	61	575	61	575	30	575	61	566	31	575	61	566	31
	Y-2	575	30	587	61	575	48	575	61	575	30	575	30	566	31	566	31	575	61	566	31
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
23	W	573	42	573	42	573	42	573	42	573	42	573	42	573	42	499	6	573	42	499	6
	W	455	17	573	62	575	30	575	30	573	62	573	42	573	62	486	13	573	42	488	27
	R-1	587	53	587	61	587	53	587	53	587	61	587	53	587	53	551	20	587	53	574	20
	R-2	551	5	566	8	551	5	574	5	575	40	566	17	575	27	566	17	575	27	574	9
	G-1	551	5	587	18	551	5	566	8	587	35	551	10	587	18	574	9	587	18	551	20
	G-2	587	35	587	53	587	35	587	35	587	53	587	18	587	35	574	5	574	35	574	9
	Y-1	566	8	587	53	566	8	575	40	587	53	566	8	575	40	492	2	575	38	457	23
	Y-2	566	12	587	35	612	42	575	27	575	40	587	62	587	35	486	12	587	35	486	37
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
24	W	573	62	573	62	573	62	573	62	573	62	573	62	573	62	574	5	573	62	574	15
	W	486	17	486	15	492	12	492	12	492	19	566	17	492	12	551	5	492	19	574	9
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	551	31	587	53	574	20
	R-2	575	27	575	12	573	42	573	42	575	27	573	42	587	18	566	17	587	35	574	20
	G-1	551	5	587	35	566	17	[illegible]	21	575	12	551	10	587	18	551	20	587	18	566	54
	G-2	575	27	575	40	575	27	575	27	575	48	575	27	575	27	551	31	575	48	551	43
	Y-1	587	35	575	27	587	53	575	27	612	31	573	42	575	40	574	2	612	37	574	15
	Y-2	566	8	612	28	566	17	612	18	612	28	566	35	612	28	551	5	612	28	574	15
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
25	W	573	21	573	21	573	21	573	21	573	21	573	21	573	21	572	17	573	21	572	32
	W	612	18	492	12	612	18	612	8	612	18	[illegible]	42	612	18	574	2	612	18	551	5
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	551	32	[illegible]	53	566	54
	R-2	612	18	612	9	612	18	612	18	612	[illegible]	575	28	612	18	566	17	612	18	551	20
	G-1	587	18	551	5	573	21	573	10	[illegible]	6	587	18	574	2	575	18	488	6	573	62
	G-2	492	6	492	6	492	6	492	6	492	6	492	6	492	6	575	11	492	6	575	30
	Y-1	587	35	587	27	587	35	575	27	575	27	587	35	612	18	566	6	612	18	566	8
	Y-2	587	21	587	18	612	18	612	9	587	11	573	21	612	18	566	5	612	18	566	8

TABLE 66

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 11

PROJ.PR. No. 26 — AMB. ILL. (RESPONSES)	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	575	6	595	6	595	6	595	6	595	6	595	6	595	6	575	27	575	6	595	40
W	583	42	486	25	587	18	481	24	486	25	587	18	486	13	612	9	481	24	612	9
R-1	587	53	587	18	587	53	587	53	587	18	587	53	587	18	575	48	587	18	572	17
R-2	595	27	486	13	595	27	486	13	486	25	595	37	486	13	595	27	486	13	595	6
G-1	581	15	[illegible]	5	575	12	551	5	574	5	587	18	551	5	583	42	551	5	595	54
G-2	571	35	587	18	587	35	587	35	587	8	587	18	587	8	571	53	587	8	587	68
Y-1	583	21	455	24	566	17	481	12	486	25	566	17	481	12	595	27	481	24	595	27
Y-2	538	24	486	7	538	16	486	7	486	13	538	24	486	25	538	8	486	13	612	28
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. 27 — AMB. ILL. (RESPONSES)	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	595	6	595	6	595	6	575	6	575	6	595	6	595	6	572	17	595	6	575	12
W	575	12	481	12	481	12	481	12	481	24	566	24	481	12	612	9	481	12	595	6
R-1	587	35	587	18	587	35	587	18	587	18	587	35	587	18	575	30	587	18	[illegible]	5
R-2	595	27	481	6	595	27	481	6	481	12	595	27	481	6	551	5	481	6	595	[illegible]
G-1	595	6	551	10	551	5	551	5	499	3	585	10	551	10	587	18	551	5	587	53
G-2	587	6	587	8	587	8	587	8	587	8	587	8	587	8	587	35	587	8	587	35
Y-1	566	8	492	9	566	17	551	5	574	5	566	17	499	6	612	18	514	5	575	6
Y-2	538	16	486	25	538	16	486	25	486	37	538	16	486	13	612	9	486	13	612	4
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. — AMB. ILL. (RESPONSES)	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	566c	31	455	33	492	36	612	37	486	37	575	61	551	40	white	

PROJ.PR. No. — AMB. ILL. (RESPONSES)	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	white	

PROJ.PR. No. — AMB. ILL. (RESPONSES)																				
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				

TABLE 67

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	575	30	575	30	575	30	575	30	575	30	575	30	575	30	575	[illegible]	575	30	[illegible]	36
	W	572	32	536c	24	572	47	572	47	536c	24	612	9	536c	24	572	17	536c	24	481	24
	R-1	583	62	581	68	575	48	575	48	581	35	575	48	579	35	572	32	581	35	481	36
	R-2	575	27	566c	17	581	35	581	35	566c	17	583	42	575	27	572	17	595	27	481	24
	G-1	566	17	583	10	572	32	570	17	575	6	566	35	583	21	575	11	581	18	486	37
	G-2	575	61	575	48	575	30	572	47	575	48	575	48	575	48	575	30	575	48	478	41
	Y-1	575	61	536c	24	575	61	575	61	536c	24	575	61	536c	24	572	32	536c	24	478	22
	Y-2	575	48	496c	22	575	48	575	30	496c	22	575	48	496c	15	572	32	496c	15	478	32
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
2	W	575	30	583	42	575	30	575	30	583	42	575	30	[illegible]	42	[illegible]	[illegible]	[illegible]	42	[illegible]	[illegible]
	W	572	47	536c	24	572	47	572	47	536c	24	572	32	536c	24	572	32	536c	24	[illegible]	24
	R-1	587	53	587	53	575	48	575	48	581	53	575	48	587	53	572	17	587	53	481	36
	R-2	581	35	566c	24	583	42	583	42	455	17	581	35	575	27	572	32	595	27	481	24
	G-1	566	35	566c	8	572	32	572	32	496	6	572	17	575	12	572	11	587	8	478	23
	G-2	575	61	587	53	575	30	575	30	587	53	575	48	583	62	575	11	587	53	478	41
	Y-1	575	61	536c	32	575	61	575	61	536c	32	575	61	536c	24	572	32	536c	24	478	22
	Y-2	575	48	496c	30	575	48	575	48	496c	22	575	48	575	40	572	32	575	40	478	32
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
3	W	572	17	583	21	572	17	572	17	583	21	572	17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	42	566c	17
	W	575	48	575	18	575	48	575	48	575	18	575	48	575	30	566c	31	575	18	566c	17
	R-1	581	53	587	68	575	48	575	48	587	53	575	48	587	53	572	17	587	53	486	37
	R-2	455	24	455	31	583	42	583	42	455	17	583	62	455	17	572	32	455	17	455	17
	G-1	566	35	514	5	575	30	575	18	514	5	572	32	551	10	575	10	551	10	536c	24
	G-2	575	18	583	10	575	18	575	30	583	10	575	30	583	10	536c	24	583	10	536c	32
	Y-1	575	48	536c	24	575	61	575	48	536c	32	575	48	536c	21	572	32	575	30	566c	17
	Y-2	575	30	566c	24	575	30	575	30	566c	24	575	30	536c	16	572	32	536c	16	566c	17
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
4	W	[illegible]	32	572	11	572	32	572	[illegible]	[illegible]	11	572	32	572	11	572	11	572	[illegible]	566c	24
	W	575	48	455	24	575	48	575	48	455	24	575	48	572	32	575	[illegible]	455	24	566c	31
	R-1	575	40	575	40	575	40	595	40	575	40	595	40	595	40	575	40	575	40	536c	32
	R-2	595	54	455	17	595	54	566c	17	455	17	595	40	566c	17	595	40	566c	11	566c	32
	G-1	566	35	514	5	572	17	572	17	514	5	572	32	566	17	[illegible]	11	514	5	493c	17
	G-2	575	30	583	10	575	30	575	30	583	10	575	18	583	24	575	11	583	10	496c	15
	Y-1	575	61	575	30	575	61	575	61	575	30	575	61	575	30	575	27	[illegible]	30	536c	32
	Y-2	575	48	455	24	575	48	575	48	455	17	575	61	575	30	575	54	455	17	536c	32
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
5	W	572	32	572	17	572	[illegible]	572	47	572	17	572	[illegible]	[illegible]	32	572	17	[illegible]	32	556c	24
	W	575	48	572	32	575	48	575	48	572	32	575	48	572	30	575	27	572	32	566c	31
	R-1	581	53	581	35	581	53	581	53	581	35	581	53	581	35	581	35	581	35	496c	32
	R-2	496c	32	566c	4	595	40	595	40	496c	15	595	27	566c	24	595	13	566c	17	536c	32
	G-1	566	17	551	10	572	32	572	17	575	18	572	32	566	17	575	11	566	17	536c	16
	G-2	572	32	572	17	572	32	572	32	572	17	572	32	572	17	572	11	572	32	536c	24
	Y-1	575	61	575	30	575	61	575	61	575	48	575	61	575	48	575	30	575	48	536c	31
	Y-2	575	48	575	30	575	61	575	61	575	48	575	61	575	48	575	54	575	30	536c	32

TABLE 68

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	572	17	[illegible]	[illegible]	[illegible]	1	572	17	572	11	572	[illegible]	572	17	572	11	573	10	455	24
	W	[illegible]	48	[illegible]	[illegible]	575	48	575	48	566	24	575	48	595	30	572	17	566	24	566	17
	R-1	587	53	587	60	575	61	575	61	587	53	575	48	[illegible]	35	478	11	587	35	478	22
	R-2	583	42	455	24	583	62	575	48	455	17	583	42	587	18	566	8	566	8	566	24
	G-1	[illegible]	17	551	10	572	32	572	17	492	9	572	17	566	17	575	11	551	10	566	24
	G-2	572	32	572	11	572	32	572	47	572	11	572	17	572	11	572	17	572	32	566	31
	Y-1	575	61	575	30	575	61	575	61	575	30	575	61	575	30	572	32	575	30	566	24
	Y-2	575	30	538	16	575	30	575	48	578	30	575	48	538	16	572	33	538	16	566	24
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
7	W	583	42	583	42	583	42	[illegible]	[illegible]	[illegible]	12	583	42	[illegible]	[illegible]	574	5	[illegible]	42	514	15
	W	595	27	587	35	587	35	587	35	595	27	595	40	595	40	566	8	595	40	499	13
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	566	35	587	53	574	20
	R-2	566	8	551	5	[illegible]	8	551	10	583	42	595	27	587	18	561	10	587	35	499	13
	G-1	575	6	612	9	575	12	575	11	587	18	595	12	583	21	575	11	587	18	551	31
	G-2	587	53	587	35	587	35	587	35	587	35	587	53	587	53	551	10	587	53	551	31
	Y-1	583	62	587	35	583	42	583	42	587	35	587	53	583	42	566	8	612	18	499	13
	Y-2	587	61	595	31	583	42	583	42	575	27	587	35	595	40	583	32	495	40	514	15
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
8	W	583	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17	583	[illegible]	[illegible]	[illegible]
	W	587	[illegible]	536	16	[illegible]	27	575	27	[illegible]	[illegible]	[illegible]	[illegible]	587	33	566	8	587	35	[illegible]	5
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	583	42	587	53	551	43
	R-2	595	27	595	12	[illegible]	35	566	17	583	12	587	35	587	18	566	35	595	27	574	5
	G-1	587	18	551	20	595	27	575	12	499	6	595	12	587	10	572	17	551	10	566	35
	G-2	587	35	587	18	587	35	587	53	587	18	587	35	587	18	572	17	587	8	572	32
	Y-1	595	40	587	35	583	42	583	42	595	27	612	18	612	18	566	8	612	18	574	5
	Y-2	587	35	583	42	595	27	595	27	587	35	587	53	583	42	572	32	583	42	551	10
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
9	W	566	17	566	17	566	17	[illegible]	21	566	17	[illegible]	[illegible]	566	17	575	18	566	17	[illegible]	1
	W	595	27	481	24	595	27	575	27	481	24	595	21	481	13	595	27	486	13	[illegible]	2
	R-1	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	35	566	8
	R-2	595	27	587	8	595	27	486	7	486	35	595	27	486	7	583	42	486	7	574	2
	G-1	583	10	551	10	595	12	587	21	514	5	587	18	551	10	583	42	514	5	587	35
	G-2	583	21	583	10	583	42	583	42	583	10	583	21	583	10	538	16	583	10	538	24
	Y-1	587	42	481	24	575	27	575	27	481	24	595	27	481	24	595	12	481	12	481	6
	Y-2	587	18	486	25	575	27	595	12	486	25	587	35	486	13	595	27	486	13	486	2
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
10	W	583	21	551	5	583	21	551	5	551	5	583	21	551	5	[illegible]	5	[illegible]	5	[illegible]	5
	W	595	27	[illegible]	15	[illegible]	[illegible]	595	[illegible]	595	12	595	27	595	27	595	12	612	18	486	6
	R-1	587	62	587	53	587	62	587	62	587	53	587	61	587	53	587	35	587	53	536	8
	R-2	595	27	566	8	575	27	566	8	566	17	595	27	595	6	566	8	575	12	493	3
	G-1	583	13	514	5	595	12	595	12	514	5	595	12	551	10	587	18	514	5	514	9
	G-2	583	62	583	10	583	42	583	42	583	10	583	42	583	10	583	42	583	42	493	18
	Y-1	587	35	583	42	595	27	595	27	587	18	595	27	595	27	612	9	595	27	486	6
	Y-2	583	42	587	18	595	27	595	27	587	18	595	27	587	18	595	12	587	18	486	13

TABLE 69

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	583	21	551	5	583	21	583	21	551	5	583	21	551	5	572	17	583	10	557	10
	W	581	35	538	16	575	27	575	27	538	16	575	27	538	16	499	3	575	27	488	6
	R-1	577	53	581	53	577	53	577	53	577	53	577	53	577	53	583	42	577	53	574	15
	R-2	581	53	612	18	577	35	566	8	551	5	575	27	575	27	566	8	575	27	488	12
	G-1	577	8	557	10	577	8	583	10	557	10	575	12	551	10	575	18	551	5	601	20
	G-2	577	35	577	8	577	35	577	35	577	18	577	35	577	18	574	5	577	18	574	9
	Y-1	577	35	575	27	575	27	575	27	575	27	583	42	612	18	612	9	612	18	486	7
	Y-2	577	35	583	42	575	27	575	27	583	42	575	27	577	35	575	12	577	35	488	23
Chip		587	67	499	27	581o	31	495	32	492	36	612	37	486	37	575	61	551	40	WHITE	
12	W	583	42	583	21	583	42	583	42	583	21	583	42	583	21	575	17	583	21	566	35
	W	575	27	612	18	575	40	575	27	612	18	492	12	492	12	551	5	492	12	574	9
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	566	35	575	40	557	43
	R-2	575	27	577	35	577	18	577	18	577	18	575	27	575	27	566	35	575	27	574	5
	G-1	575	18	551	20	577	35	583	42	492	9	583	42	551	5	575	30	551	5	572	47
	G-2	577	53	577	18	577	53	577	35	577	18	577	53	577	35	566	17	577	35	566	54
	Y-1	575	27	577	35	575	27	575	27	575	27	612	28	612	18	566	8	612	18	574	9
	Y-2	575	27	583	42	575	27	575	27	577	35	575	27	577	35	590	32	577	35	574	9
Chip		587	67	499	27	581o	31	495	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13	W	[illegible]	7	566	17	[illegible]	[illegible]	583	[illegible]	[illegible]	5	583	21	[illegible]	8	583	42	566	7	572	17
	W	575	27	486	13	575	27	575	40	486	13	575	40	486	13	575	27	486	25	551	5
	R-1	575	54	575	40	575	54	575	40	575	40	575	54	575	40	575	27	575	40	566	35
	R-2	575	27	566	8	575	12	577	35	566	35	575	27	575	12	566	35	575	12	551	5
	G-1	577	18	574	5	477	35	583	42	492	13	577	18	551	18	583	42	551	18	575	30
	G-2	577	35	577	8	577	53	577	53	577	8	577	53	577	8	577	35	577	8	[illegible]	32
	Y-1	575	27	566	8	575	27	575	27	566	8	612	18	612	18	612	9	612	18	574	2
	Y-2	[illegible]	9	[illegible]	8	575	27	575	27	486	7	577	35	486	7	577	18	486	7	557	20
Chip		587	67	499	27	581o	31	495	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14	W	583	42	583	21	583	42	[illegible]	42	583	21	583	42	583	21	583	21	583	21	557	5
	W	575	27	538	16	575	27	575	27	612	18	575	27	612	18	612	28	612	18	499	6
	R-1	575	40	575	27	575	40	575	40	575	27	575	40	575	27	571	35	575	27	557	31
	R-2	612	28	566	17	612	18	566	17	566	35	612	18	612	18	566	35	575	27	551	10
	G-1	575	12	574	5	577	35	583	42	551	18	583	21	557	10	583	42	566	12	566	54
	G-2	577	53	577	18	577	53	577	35	577	8	577	35	571	18	577	8	577	18	566	35
	Y-1	575	27	572	12	575	27	575	27	612	18	612	28	612	18	575	12	612	18	557	5
	Y-2	577	35	583	42	575	27	575	27	583	42	577	35	575	27	577	18	575	27	499	13
Chip		587	67	499	27	581o	31	495	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15	W	583	42	583	42	583	42	583	42	583	42	583	42	583	[illegible]	566	8	583	42	583	62
	W	612	15	492	12	612	18	575	27	575	27	612	18	612	18	575	27	612	18	403	.
	R-1	575	40	575	40	575	40	575	40	575	40	575	40	575	40	583	42	575	40	557	43
	R-2	612	28	583	42	575	40	583	42	566	12	583	40	492	12	566	35	492	12	574	9
	G-1	577	18	574	5	575	12	577	18	551	10	577	18	583	10	575	18	583	10	566	54
	G-2	583	62	583	21	583	62	583	42	583	21	583	62	583	21	577	18	583	21	557	20
	Y-1	575	27	577	35	575	27	575	27	612	18	575	27	575	27	566	8	575	27	499	6
	Y-2	577	35	583	42	575	27	575	27	583	42	575	27	575	27	572	32	575	27	499	13

TABLE 70

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16 (RESPONSES)	W	583	21	583	10	583	42	583	42	583	10	583	21	583	10	583	42	583	21	583	42
	W	583	21	566	17	566	24	566	24	481	12	566	24	566	24	566	31	566	24	587	18
	R-1	587	53	587	35	587	68	587	53	587	35	587	53	587	35	583	42	587	35	572	32
	R-2	612	9	478	5	612	18	558	4	478	6	612	18	612	9	566	8	612	9	566	8
	G-1	574	2	499	6	575	12	575	12	583	21	587	8	574	2	583	42	499	3	587	65
	G-2	583	21	583	10	583	42	583	42	583	21	583	42	583	21	583	62	583	21	575	48
	Y-1	587	35	566	8	566	24	566	24	566	8	558	16	566	8	558	16	566	8	587	8
	Y-2	558	16	551	5	558	24	558	16	551	5	558	24	551	5	558	16	551	5	587	8
Chip		587	67	499	27	561e	31	455	32	492	36	612	37	486	37	575	61	551	40	[illegible]	
17 (RESPONSES)	W	583	21	583	10	583	21	583	42	583	10	583	21	583	10	583	42	583	10	583	21
	W	583	21	455	17	566	17	566	24	481	12	566	24	566	24	455	24	566	24	583	10
	R-1	595	40	595	27	595	40	595	27	595	27	595	40	595	27	583	42	595	27	572	32
	R-2	492	12	566	8	492	12	551	5	566	17	492	12	612	18	566	8	612	9	566	8
	G-1	551	5	574	5	583	21	583	21	612	9	499	3	551	10	575	18	574	5	583	62
	G-2	583	42	583	21	583	42	583	42	583	10	583	21	583	21	583	42	583	21	575	48
	Y-1	558	16	566	8	558	16	558	24	566	8	558	24	558	24	492	12	558	16	583	10
	Y-2	583	21	574	2	558	16	558	16	574	2	558	16	574	2	558	8	574	2	583	10
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
18 (RESPONSES)	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	572	11	583	10	572	17
	W	566	17	566	24	566	24	566	31	566	31	566	24	566	24	478	11	566	24	486	6
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	583	42	587	53	587	31
	R-2	583	21	583	42	587	35	583	21	583	42	583	10	583	42	566	8	583	42	574	5
	G-1	575	6	575	5	499	3	575	8	612	9	551	5	566	8	575	18	574	2	583	42
	G-2	583	21	583	21	583	21	583	21	583	21	583	21	583	21	572	7	583	21	572	32
	Y-1	[illegible]	16	558	16	558	16	558	16	612	18	558	16	558	16	558	8	558	16	492	3
	Y-2	[illegible]	10	[illegible]	16	[illegible]	15	558	8	558	16	558	24	558	16	455	8	558	16	572	32
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
19 (RESPONSES)	W	595	6	595	6	595	6	595	6	595	[illegible]	595	6	595	6	595	6	595	6	595	40
	W	455	17	455	24	455	24	455	24	455	24	—		455	17	455	17	455	17	595	54
	R-1	595	87	595	27	595	27	595	87	595	27	595	27	595	27	595	40	595	27	595	54
	R-2	566	4	455	4	478	5	478	5	566	4	—		455	4	478	5	455	4	612	37
	G-1	492	12	595	16	492	4	499	6	587	8	499	3	551	5	595	27	574	2	595	40
	G-2	[illegible]	[illegible]	[illegible]	[illegible]	595	[illegible]	595	[illegible]	595	[illegible]	595	[illegible]	595	[illegible]	595	27	595	12	595	40
	Y-1	[illegible]	[illegible]	566	8	[illegible]	4	455	17	499	3	455	4	455	4	566	13	551	5	595	54
	Y-2	[illegible]	[illegible]	566	8	[illegible]	8	455	17	566	8	455	4	455	8	455	4	455	4	595	54
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	[illegible]	
20 (RESPONSES)	W	551	5	583	10	551	5	583	11	583	10	551	5	583	10	572	1	583	10	583	21
	W	455	17	455	24	481	24	481	24	455	24	481	24	481	24	478	36	455	24	595	12
	R-1	587	35	587	35	587	35	587	18	587	53	587	35	587	53	551	5	587	53	551	5
	R-2	486	13	612	18	486	25	486	25	612	9	486	25	486	7	486	27	492	7	595	6
	G-1	574	5	583	21	499	6	574	5	587	18	574	5	574	5	575	18	551	10	587	53
	G-2	[illegible]	6	[illegible]	12	575	6	575	6	575	12	575	6	575	12	[illegible]	27	575	12	575	27
	Y-1	[illegible]	12	[illegible]	8	481	24	481	24	566	8	481	24	566	17	481	24	558	17	595	12
	Y-2	[illegible]	6	558	17	481	24	481	24	558	17	481	12	566	8	481	24	566	17	595	27

TABLE 71

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
21 (RESPONSES)	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11
	W	455	17	478	22	481	24	481	36	455	24	455	31	455	24	455	17	455	24	496c	4
	R-1	587	35	587	53	587	35	587	18	587	53	587	35	587	35	566	8	587	35	566	8
	R-2	478	5	455	4	478	11	478	11	566c	4	478	5	566c	4	486	13	566	4	566	8
	G-1	551	5	551	10	492	3	575	11	583	21	574	5	551	5	575	18	574	5	583	42
	G-2	478	5	478	5	478	5	478	5	478	5	478	5	478	5	478	5	478	5	572	17
	Y-1	566	8	566c	8	481	12	481	24	566c	17	566	8	566c	24	481	6	566c	24	612	4
	Y-2	488	6	566c	17	488	6	488	23	566c	17	488	6	566c	17	488	23	566c	17	612	4
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
22 (RESPONSES)	W	572	17	572	32	572	17	572	17	572	32	572	17	572	32	572	11	572	17	566c	17
	W	587	53	587	68	566c	24	566c	31	575	48	575	30	575	30	566c	31	575	30	566c	24
	R-1	587	53	583	62	587	53	587	53	583	62	587	53	583	62	587	18	583	62	455	24
	R-2	455	24	481	24	566c	24	566c	24	583	42	566c	24	583	42	566c	24	583	42	478	22
	G-1	574	2	575	30	499	6	492	9	572	17	551	5	566	35	566	8	566	17	532c	16
	G-2	572	17	572	32	572	17	572	17	572	32	572	17	572	32	566c	24	572	32	566c	31
	Y-1	575	48	575	61	532c	16	532c	16	575	61	575	30	575	61	532c	32	575	61	532c	32
	Y-2	575	30	575	48	566	17	566	17	575	48	575	30	575	48	566c	24	575	48	566c	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
23 (RESPONSES)	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	499	6	583	10	499	6
	W	595	27	612	18	595	27	455	17	587	35	583	42	587	35	499	3	587	35	492	9
	R-1	587	53	587	53	587	53	587	35	587	53	587	53	587	53	587	18	587	53	551	31
	R-2	587	18	587	8	583	42	455	4	566	8	—		455	4	478	22	455	4	492	3
	G-1	575	5	575	12	574	5	499	6	587	18	566	8	587	18	574	9	583	21	551	20
	G-2	587	53	587	53	587	18	587	18	587	35	587	18	587	35	574	5	587	35	574	15
	Y-1	551	5	583	42	583	21	583	21	587	35	587	18	583	42	488	12	587	35	488	12
	Y-2	583	62	583	42	583	21	532c	8	587	35	583	42	587	35	481	24	587	35	486	25
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
24 (RESPONSES)	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	557	10	583	21	551	10
	W	587	35	575	27	455	8	455	8	575	27	587	35	575	27	566	8	575	40	574	5
	R-1	575	40	575	40	575	40	575	27	595	40	575	40	575	40	595	12	575	40	551	43
	R-2	612	18	612	9	551	5	566	8	595	5	612	18	612	18	566	35	612	18	499	13
	G-1	551	10	587	18	551	10	574	5	612	9	551	10	583	10	551	20	583	21	566	54
	G-2	583	42	583	62	583	42	583	10	583	62	583	42	583	42	[illegible]	17	583	62	566	35
	Y-1	595	27	587	53	566	8	566	8	595	27	595	27	612	18	566	8	612	18	499	13
	Y-2	583	42	587	35	583	42	583	21	587	35	587	18	575	27	486c	7	575	27	499	6
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
25 (RESPONSES)	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	575	11	583	10	572	17
	W	587	18	595	27	612	18	612	18	612	18	492c	12	612	18	612	9	612	18	496	3
	R-1	587	53	587	53	587	53	587	35	587	53	587	53	587	53	575	30	587	53	566	54
	R-2	612	18	595	27	595	12	595	12	595	6	—		612	18	566	35	612	18	551	10
	G-1	587	18	566	8	583	21	575	18	566	8	583	10	551	5	575	18	551	5	583	42
	G-2	575	6	575	6	575	6	575	6	575	6	575	6	575	6	575	18	575	6	575	30
	Y-1	583	42	575	27	612	18	612	18	492c	12	612	18	612	18	566	8	612	18	551	5
	Y-2	583	42	532c	8	583	21	583	21	583	42	587	18	532c	16	551	5	532c	16	551	5

TABLE 72

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 12

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
26 (RESPONSES)	W	587	8	587	8	587	8	587	8	587	8	587	8	587	8	587	18	587	8	587	35
	W	587	18	455	17	455	24	455	24	455	17	566c	24	455	24	566c	24	455	24	595	12
	R-1	587	35	587	35	587	35	587	35	587	35	587	35	587	35	575	48	587	35	572	17
	R-2	538c	8	455	8	538c	8	455	8	478	11	538c	4	455	4	566	35	566	17	612	4
	G-1	566	17	557	10	595	12	583	21	499	6	583	10	557	10	583	21	551	10	587	53
	G-2	595	12	595	6	595	12	595	12	595	6	595	12	595	12	595	27	595	12	595	40
	Y-1	492c	12	455	4	538c	16	538c	16	481	12	538c	16	481	12	538c	16	481	12	575	6
	Y-2	583	21	481	12	587	35	587	18	481	12	538c	16	481	12	595	6	481	12	612	9
Chip		587	67	499	27	566c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
27 (RESPONSES)	W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	6
	W	595	12	455	17	566c	17	566c	24	455	17	566c	17	566c	17	566c	31	566c	24	538c	4
	R-1	587	53	587	35	587	53	587	53	587	35	587	53	587	35	583	42	587	35	574	2
	R-2	455	4	566c	4	538c	4	538c	4	455	8	455	4	538c	4	566c	17	538c	4	575	6
	G-1	557	10	594	5	551	5	583	10	551	20	583	21	551	10	583	21	557	5	583	42
	G-2	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	27	595	12	595	27
	Y-1	583	42	557	5	566c	17	566c	17	551	5	612	18	612	18	612	9	612	18	612	4
	Y-2	583	21	455	17	583	21	583	21	455	17	583	42	455	8	587	35	455	8	566	8
Chip		587	67	499	27	566c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	566c	31	455	33	492	36	612	37	486	37	575	61	551	40	White	
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip		587	67	499	27	566c	31	455	33	492	36	612	37	486	37	575	61	551	40	White	
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				

TABLE 72a

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
1	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	572	11	583	42	486	25
	W	538c	32	538c	24	538c	32	493c	19	538c	24	538c	32	538c	24	612	4	538c	24	478	22
	R-1	587	53	595	40	587	53	587	53	595	40	587	53	587	53	488	34	595	40	488	34
	R-2	455	18	black		455	8	455	8	black		583	42	583	21	572	17	583	21	481	36
	G-1	486	7	612	4	566	17	566	8	583	21	575	18	587	18	481	12	595	12	486	37
	G-2	583	42	583	62	583	42	583	42	583	78	583	42	583	62	481	12	583	62	481	24
	Y-1	538c	32	538c	16	566c	24	538c	24	black		572	32	595	40	481	6	595	54	455	18
	Y-2	498c	30	575	30	498c	15	575	48	575	18	575	30	575	30	595	6	575	30	478	32
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
2	W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	486	13	587	35	486	25
	W	538c	24	538c	16	538c	24	538c	32	538c	16	538c	24	498c	22	478	5	538c	24	481	24
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	492	27	595	40	492	36
	R-2	583	42	566c	17	583	42	583	42	black		583	42	455	8	572	11	455	8	481	36
	G-1	492	3	587	18	566	17	551	5	583	10	551	10	595	6	492	9	587	18	488	23
	G-2	587	35	587	53	587	35	587	35	587	53	587	35	587	53	488	23	587	35	587	53
	Y-1	566	8	595	40	566	8	538c	24	612	18	566	8	587	53	486	7	587	53	478	32
	Y-2	566	8	583	62	575	30	587	53	575	30	566	17	583	62	612	4	583	42	481	36
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
3	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	10	566c	4
	W	587	35	583	42	587	35	587	35	583	42	587	35	583	42	566c	17	583	42	538c	8
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	40	492	3	595	54	492	27
	R-2	583	42	566c	17	583	42	583	42	566c	17	583	62	455	18	572	17	455	8	455	4
	G-1	551	10	514	5	566	35	566	17	566	17	566	17	551	10	498c	5	551	5	498c	22
	G-2	575	11	583	21	575	11	575	11	583	42	575	18	583	42	572	11	583	42	538c	32
	Y-1	583	42	587	18	583	42	587	35	587	8	583	42	587	35	538c	4	587	35	538c	16
	Y-2	575	30	575	48	575	30	575	30	575	48	575	30	538c	24	566c	4	538c	24	566c	17
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
4	W	572	17	572	17	572	32	572	17	572	17	572	32	572	17	538c	16	572	17	538c	24
	W	595	40	583	21	587	53	587	35	455	18	583	42	455	18	493c	6	583	21	593c	19
	R-1	595	54	595	54	595	54	595	54	595	54	595	54	595	54	493c	4	595	54	593c	26
	R-2	595	27	566c	17	595	27	566c	24	566c	24	566c	24	566c	8	566c	4	566c	17	538c	32
	G-1	566	17	551	10	488	12	566	17	566	8	566	17	566	17	493c	6	551	10	493c	26
	G-2	575	48	575	18	575	30	575	30	575	11	575	30	575	11	498c	22	575	11	498c	30
	Y-1	583	42	566c	17	583	42	566c	17	455	18	583	42	455	18	612	9	455	18	612	46
	Y-2	575	48	575	30	587	53	575	30	455	26	575	48	455	26	595	6	455	26	538c	32
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
5	W	572	32	572	17	572	32	572	32	572	17	572	32	572	17	572	11	572	17	566c	24
	W	575	48	566c	17	575	48	575	30	455	18	575	48	572	60	566c	8	455	18	566c	32
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	498c	30	595	40	498c	30
	R-2	455	4	566c	4	612	18	566c	4	478	5	455	8	595	12	566c	4	595	6	566c	31
	G-1	566	17	551	10	566	17	566	17	566	17	566	35	566	17	575	11	566	35	538c	32
	G-2	572	47	572	32	572	32	572	32	572	17	572	32	572	17	498c	15	572	11	498c	15
	Y-1	575	48	566c	17	575	48	575	48	566c	17	575	48	566c	24	612	4	612	18	612	50
	Y-2	575	30	575	48	575	48	575	30	575	[illegible]	575	48	455	18	538c	32	455	18	538c	32

TABLE 73

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
6	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	455	18
	W	575	30	575	48	575	30	575	30	575	48	572	32	575	18	561c	4	575	18	561c	8
	R-1	595	27	595	40	595	27	595	27	595	40	595	27	595	40	488	23	595	40	488	34
	R-2	583	42	583	21	583	42	583	42	566	17	566	17	583	42	455	8	583	21	478	22
	G-1	566	8	551	5	566	35	566	17	551	5	566	17	566	35	538c	8	551	10	538c	24
	G-2	572	17	572	11	572	17	572	17	572	11	572	17	572	11	561c	24	572	11	561c	24
	Y-1	575	48	575	30	575	48	575	30	587	35	575	48	595	27	561c	4	595	27	538c	16
	Y-2	575	30	575	48	575	48	575	30	575	48	575	30	575	48	561c	8	575	48	455	18
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
7	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	551	20	583	42	551	31
	W	583	62	595	40	587	53	587	53	595	54	583	62	595	54	551	5	595	40	514	9
	R-1	595	27	595	54	595	27	595	40	595	54	595	27	595	54	566	54	595	54	514	20
	R-2	566	17	612	28	566	8	612	37	595	6	566	17	587	53	566	17	595	40	499	20
	G-1	514	5	587	18	583	21	583	10	587	8	583	10	587	8	566	17	587	18	551	43
	G-2	587	35	587	68	587	35	587	35	587	68	587	35	587	53	551	31	587	53	551	43
	Y-1	583	62	595	27	583	62	587	35	595	27	583	42	595	40	551	5	595	40	514	15
	Y-2	583	62	587	53	583	42	587	35	595	40	566	17	612	28	551	5	612	28	514	20
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
8	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	572	11	583	42	572	32
	W	587	35	595	27	587	35	583	42	595	27	587	35	595	27	566	8	595	27	551	10
	R-1	595	27	595	54	595	40	595	40	595	54	595	40	595	54	551	20	595	54	499	27
	R-2	595	27	black		595	27	595	27	612	28	551	10	595	27	566	17	595	27	514	9
	G-1	595	12	486	7	583	10	492	3	478	5	595	6	478	5	572	17	478	5	575	48
	G-2	498c	4	498c	4	498c	4	498c	4	498c	4	498c	4	498c	4	572	11	498c	4	572	32
	Y-1	583	42	587	35	595	27	587	35	583	21	583	42	583	42	551	5	583	21	551	10
	Y-2	583	42	587	35	595	27	587	35	612	18	612	18	612	18	566	8	612	18	551	20
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
9	W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	27	595	6	595	27
	W	612	18	455	18	561c	17	561c	8	486	13	612	18	486	25	612	4	486	13	612	18
	R-1	583	42	583	42	583	42	583	42	583	42	583	42	583	42	561c	4	583	42	561c	4
	R-2	455	4	595	12	587	18	478	5	455	8	595	27	455	4	551	5	566	8	595	6
	G-1	583	10	551	5	566	8	551	10	514	5	595	12	551	10	583	21	551	10	587	53
	G-2	595	27	493c	6	493c	12	493c	12	493c	6	493c	12	493c	6	493c	19	493c	6	493c	26
	Y-1	455	18	481	24	561c	24	481	24	486	25	538c	24	481	24	538c	4	481	24	595	27
	Y-2	538c	8	486	7	538c	16	486	13	486	25	538c	16	486	13	486	7	486	13	612	18
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
10	W	551	5	551	5	551	5	551	5	551	5	551	5	551	5	551	5	551	5	455	4
	W	612	18	455	8	612	18	612	9	455	18	612	18	612	18	486	7	561c	17	488	6
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	566	8	595	40	566	8
	R-2	595	27	595	12	595	6	561c	4	583	10	587	18	566	8	499	3	595	12	488	6
	G-1	499	6	514	5	551	5	551	10	514	5	499	3	566	17	572	11	551	10	575	18
	G-2	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	17	561c	4	561c	17
	Y-1	551	5	486	13	595	27	486	13	538c	16	587	35	486	13	486	7	486	13	486	7
	Y-2	566	8	514	5	498c	15	514	5	499	6	498c	15	514	5	488	6	514	5	488	6

TABLE 74

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	499	6	583	10	499	6
	W	595	27	492c	12	612	18	612	18	492c	12	595	27	612	18	499	3	612	18	492	3
	R-1	587	68	595	54	587	68	587	68	595	54	587	68	595	54	499	13	587	68	499	27
	R-2	583	42	583	21	587	35	587	18	black		587	18	595	27	492	3	595	12	488	6
	G-1	498c	4	478	5	587	8	551	5	587	8	583	10	566	17	572	17	551	10	572	17
	G-2	612	9	612	4	612	9	612	9	612	4	612	9	612	4	499	6	612	4	499	13
	Y-1	566	18	612	18	595	27	612	18	492c	12	583	42	612	18	492	3	612	18	499	3
	Y-2	583	42	587	35	595	27	587	18	587	35	583	42	587	35	612	4	587	35	486	25
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
12	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	583	21	583	42	583	42
	W	583	42	583	42	587	35	595	27	612	18	595	27	612	18	514	2	493	12	551	20
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	35	595	54	551	43
	R-2	587	35	587	18	587	35	587	35	595	54	595	27	612	18	566	17	612	18	514	20
	G-1	595	6	481	6	587	8	499	3	486	7	587	18	538c	4	575	18	492c	3	595	61
	G-2	587	35	587	53	587	35	587	35	587	18	587	35	587	18	572	32	587	35	572	47
	Y-1	583	42	587	35	583	62	587	53	587	18	587	35	612	18	566	8	612	18	551	20
	Y-2	583	42	612	18	595	27	612	18	612	18	587	35	612	18	566	17	612	18	551	31
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13	W	583	10	566	8	583	10	583	10	566	8	583	10	566	8	575	11	566	8	575	30
	W	498c	15	455	18	566c	24	566c	24	481	12	566c	24	481	12	566c	24	481	12	583	21
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	572	11	595	40	572	17
	R-2	595	12	595	6	595	6	566c	4	455	4	595	12	566c	4	478	5	612	18	514	2
	G-1	587	18	514	9	583	10	481	6	499	3	587	18	551	5	575	30	566	8	583	62
	G-2	583	21	583	10	583	21	583	21	583	10	583	21	583	10	575	30	583	10	575	48
	Y-1	566	17	551	5	538c	16	551	10	551	5	538c	24	551	10	488	6	551	10	587	8
	Y-2	566	8	514	2	566c	16	514	2	574	2	498c	15	574	2	492	3	574	2	575	30
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14	W	566	8	566	8	566	8	566	8	566	8	566	8	566	8	566	17	566	8	566	17
	W	595	27	587	35	595	27	595	27	612	18	595	27	566c	17	595	12	566c	17	514	2
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	572	17	595	40	572	32
	R-2	595	27	595	12	595	12	595	27	black		595	12	595	27	566	8	612	18	499	6
	G-1	612	4	551	10	583	10	551	10	499	6	587	18	488	6	575	11	514	5	566	54
	G-2	583	21	583	10	583	21	583	21	583	10	583	21	583	10	566	35	583	10	566	35
	Y-1	566	8	583	21	612	18	612	18	492c	12	595	27	612	18	499	3	612	18	514	2
	Y-2	583	21	538c	16	498c	15	498c	5	583	21	587	35	498c	15	551	5	498c	15	566	17
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	566	35	583	42	566	54
	W	587	35	612	18	587	35	595	27	595	27	587	35	612	18	566	8	612	18	551	5
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	35	595	54	514	20
	R-2	612	18	612	9	595	27	612	18	595	27	587	35	595	27	566	8	595	27	514	9
	G-1	566	8	486	7	492	3	583	10	551	5	583	21	566	8	575	11	499	3	551	20
	G-2	587	35	587	53	587	35	587	35	587	53	587	35	587	35	566	35	587	18	566	35
	Y-1	587	18	595	27	583	42	595	27	492c	12	587	35	612	18	566	8	612	18	499	3
	Y-2	583	21	612	18	587	35	612	18	612	18	587	35	612	18	486	7	612	18	514	9

RESPONSES

TABLE 75

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ.PR. No. 16	AMB. ILL. W (RESPONSES)	583	10	583	10	583	10	583	10	583	10	583	10	583	10	595	27	583	10	595	27
	W	612	18	455	18	561c	17	561c	17	486	13	561c	24	486	13	561c	8	486	13	595	27
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	575	11	587	53	575	30
	R-2	561c	8	455	8	455	8	478	11	478	11	455	8	455	4	486	7	478	5	583	21
	G-1	583	21	514	5	583	10	583	10	499	6	587	18	551	10	575	18	551	10	587	68
	G-2	595	12	595	6	595	12	595	12	595	6	595	12	595	6	595	12	595	6	595	54
	Y-1	551	5	499	3	551	5	551	5	488	6	561c	24	499	3	587	8	551	5	587	18
	Y-2	498c	15	499	3	561c	17	561c	17	499	3	498c	15	499	3	498c	5	499	3	587	18
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 17	AMB. ILL. W (RESPONSES)	583	10	583	10	583	10	583	10	583	10	583	10	583	10	583	42	583	10	583	42
	W	583	21	561c	17	561c	24	561c	24	478	11	561c	31	561c	24	455	4	561c	17	587	8
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	572	17	587	53	572	32
	R-2	455	4	455	8	455	8	455	4	455	8	538c	4	455	8	538c	4	561c	8	575	30
	G-1	583	10	514	5	499	3	499	3	478	5	595	6	551	10	583	42	551	10	583	78
	G-2	583	10	583	10	583	10	583	10	583	10	583	10	583	10	575	30	583	10	575	48
	Y-1	583	42	455	8	561c	17	538c	16	499	3	561c	17	499	3	587	18	499	3	587	18
	Y-2	566	8	538c	8	561c	17	538c	8	566	8	538c	16	566	8	583	10	566	8	583	10
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 18	AMB. ILL. W (RESPONSES)	587	18	587	18	587	18	587	18	587	18	587	18	587	18	572	11	587	18	572	17
	W	566	17	561c	8	561c	17	561c	17	black	–	561c	8	561c	24	492	3	561c	24	651	5
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	551	20	595	54	514	15
	R-2	561c	4	black	–	561c	8	561c	8	black	–	538c	4	538c	8	566	17	538c	16	499	3
	G-1	551	5	514	2	514	5	595	6	486	7	583	21	478	5	575	18	514	2	583	62
	G-2	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	32
	Y-1	583	42	587	18	538c	16	538c	16	587	18	583	42	612	18	574	2	612	18	492	3
	Y-2	566	8	538c	16	561c	17	583	10	583c	24	538c	16	538c	16	572	17	538c	16	499	3
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 19	AMB. ILL. W (RESPONSES)	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	27	595	12	595	40
	W	612	18	455	8	455	18	455	18	black		455	26	551	5	493c	3	455	18	593c	14
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	54	595	27	595	54
	R-2	455	4	black	–	455	4	455	4	black	–	455	4	455	4	561c	8	455	4	612	46
	G-1	583	10	583	10	551	5	551	10	499	3	583	10	551	10	583	42	551	10	595	54
	G-2	493c	6	493c	6	493c	6	493c	6	493c	6	493c	6	493c	6	493c	19	493c	6	493c	19
	Y-1	455	8	black	–	561c	17	455	8	black		478	11	455	4	595	27	455	4	595	54
	Y-2	561c	8	455	4	455	18	566	8	455	18	538c	8	455	8	587	68	455	8	595	54
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 20	AMB. ILL. W (RESPONSES)	587	8	587	8	587	8	587	8	587	8	587	8	587	8	587	35	587	8	587	35
	W	486	13	455	18	486	13	486	25	486	13	455	26	486	13	612	4	486	13	595	6
	R-1	595	27	595	40	595	27	595	27	595	40	595	27	595	40	566	17	595	40	551	10
	R-2	566	17	566	8	566	17	566	17	612	18	566	17	612	9	551	5	612	18	514	2
	G-1	583	10	551	5	514	5	514	2	481	6	587	8	514	2	583	42	551	5	587	53
	G-2	566	8	566	8	566	8	566	8	566	8	566	8	566	8	575	18	566	8	575	30
	Y-1	488	6	455	8	566	8	566	8	587	18	486	25	561c	17	612	4	561c	17	612	4
	Y-2	481	6	538c	8	481	6	481	6	538c	16	481	12	538c	8	595	6	538c	16	595	6

TABLE 76

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

PROJ.PR.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 21	W	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4	561c	4
	W	583	21	455	8	561c	17	561c	8	538c	16	455	18	538c	16	587	8	538c	16	583	10
	R-1	587	53	595	54	587	53	587	53	595	54	587	53	595	54	566	17	595	54	551	20
	R-2	561c	8	black		561c	4	561c	8	561c	4	478	5	538c	4	566	8	538c	4	514	2
	G-1	499	3	514	5	583	10	587	8	583	10	583	10	551	5	575	18	551	5	583	42
	G-2	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	30
	Y-1	566	4	583	21	561c	8	561c	8	612	18	566	8	538c	16	566	8	538c	16	595	6
	Y-2	561c	8	561c	17	538c	16	561c	17	538c	8	572	11	538c	16	538c	4	538c	16	566	8
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 22	W	575	18	575	30	575	18	575	30	575	30	575	18	575	30	561c	24	575	30	561c	24
	W	455	26	575	48	575	48	575	61	575	61	561c	17	575	61	561c	31	575	61	561c	31
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	561c	24	587	53	561c	24
	R-2	561c	24	583	42	561c	17	561c	17	583	42	561c	24	583	42	455	8	583	42	455	26
	G-1	551	10	566	35	551	10	[illegible]	17	566	35	514	5	566	35	561c	8	566	35	561c	31
	G-2	572	32	572	47	572	47	572	47	572	47	572	32	572	32	561c	31	572	47	561c	31
	Y-1	583	21	575	61	583	42	583	42	575	61	538c	16	575	61	538c	8	575	61	538c	32
	Y-2	575	30	575	61	575	48	575	48	575	61	561c	24	575	48	561c	24	575	61	561c	31
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 23	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	492	9	583	42	492	18
	W	551	20	595	27	[illegible]	35	595	27	612	[illegible]	566	35	612	28	566	8	612	28	481	23
	R-1	587	53	587	68	587	53	587	53	587	68	587	53	587	53	551	31	587	53	514	20
	R-2	551	10	595	27	583	42	583	42	583	42	566	17	583	42	566	8	595	27	488	23
	G-1	499	6	587	18	583	10	583	10	595	12	551	10	583	10	499	6	587	18	551	31
	G-2	551	10	587	53	551	5	587	35	587	53	551	5	587	35	551	31	587	35	551	31
	Y-1	566	8	583	21	587	35	587	35	587	18	583	42	587	35	488	6	587	35	488	23
	Y-2	566	8	583	62	583	42	583	42	583	42	583	42	583	78	486	13	583	78	488	34
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 24	W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	551	20	587	35	551	31
	W	595	27	612	28	587	35	595	27	612	18	566	17	612	28	566	8	612	28	514	9
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	40	566	54	595	40	551	43
	R-2	583	42	595	27	587	35	587	35	black		566	17	583	21	499	3	587	35	499	20
	G-1	583	10	587	8	551	5	583	10	587	18	514	5	583	10	572	17	583	21	551	43
	G-2	587	35	587	68	587	35	587	35	587	48	587	35	587	53	551	20	587	53	551	31
	Y-1	583	42	612	28	587	35	595	27	595	40	583	42	595	40	551	5	595	40	499	20
	Y-2	583	42	587	53	612	18	595	27	612	28	595	40	612	28	499	3	612	28	499	20
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 25	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	572	17	583	42	572	32
	W	587	35	612	18	595	27	612	18	612	18	583	42	612	18	566	8	612	18	566	17
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	572	47	595	27	566	54
	R-2	583	42	595	40	583	42	583	21	black		566	8	595	40	551	5	595	40	514	9
	G-1	587	18	514	2	595	12	551	5	486	7	583	21	488	6	575	30	566	8	583	78
	G-2	493c	3	493c	3	493c	3	493c	3	493c	3	493c	3	493c	3	575	18	493c	3	575	30
	Y-1	595	27	583	10	587	35	612	18	587	8	583	42	612	18	566	8	612	18	566	17
	Y-2	583	42	587	18	587	35	583	42	587	8	583	10	538c	24	551	5	538c	24	551	20

TABLE 77

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 13

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
26 (RESPONSES)	W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	27	595	6	595	40
	W	612	18	455	8	561c	17	561c	8	455	8	561c	24	455	8	561c	24	455	18	595	27
	R-1	587	35	587	35	587	35	587	35	587	35	587	35	587	35	587	8	587	35	587	8
	R-2	587	35	587	18	587	18	587	18	478	5	587	18	455	4	538c	4	455	4	595	6
	G-1	583	21	551	5	583	10	566	8	514	5	583	10	551	10	583	42	551	10	595	40
	G-2	612	18	612	9	612	18	612	18	612	9	612	18	612	4	612	28	612	4	612	37
	Y-1	481	12	486	13	583	21	481	12	486	7	561c	17	486	7	595	12	486	7	595	27
	Y-2	587	18	481	6	587	18	481	6	481	6	538c	24	481	6	595	27	481	6	612	28
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
27 (RESPONSES)	W	587	8	587	8	587	8	587	8	587	8	587	8	587	8	587	35	587	8	587	35
	W	561c	24	455	18	561c	17	561c	17	455	18	561c	24	455	26	561c	17	455	18	595	12
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	455	4	595	40	455	4
	R-2	561c	8	561c	4	561c	4	561c	8	587	18	587	8	595	12	514	2	595	12	486	7
	G-1	551	5	514	2	514	5	551	10	486	13	587	18	551	5	575	18	551	10	587	53
	G-2	538c	4	538c	4	538c	4	538c	4	538c	4	538c	4	538c	4	538c	4	538c	4	538c	24
	Y-1	566	8	551	5	561c	17	561c	17	499	3	561c	17	566	17	612	4	566	8	612	4
	Y-2	455	4	481	6	538c	16	481	6	481	6	538c	16	481	6	595	12	481	6	612	4
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip																					
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				
Chip																					
(RESPONSES)	W																				
	W																				
	R-1																				
	R-2																				
	G-1																				
	G-2																				
	Y-1																				
	Y-2																				

TABLE 78

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

	AMB. ILL.	1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ.PR. No. 1 RESPONSES	W	575	48	575	47	[illegible]	30	572	32	[illegible]	[illegible]	575	30	575	30	475	22	575	30	475	[illegible]
	W	538e	32	612	28	572	47	572	47	538e	24	572	32	575	30	538e	16	612	28	481	24
	R-1	595	40	595	40	595	27	595	27	595	40	595	27	595	40	486	25	595	27	486	37
	R-2	455	18	561e	17	575	48	575	48	561e	17	561e	8	455	8	455	4	455	8	481	24
	G-1	572	17	583	21	566	17	572	32	566	8	575	11	583	10	478	11	566	17	481	24
	G-2	575	30	575	48	575	30	572	47	575	30	575	30	575	61	575	11	575	48	455	33
	Y-1	575	48	575	30	575	48	575	61	575	30	575	48	595	27	538e	8	595	27	455	18
	Y-2	575	48	498e	22	575	48	575	61	498e	22	575	48	498e	22	595	6	498e	22	478	32
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 2 RESPONSES	W	575	30	575	[illegible]	575	[illegible]	[illegible]	30	583	42	575	30	583	42	475	22	575	48	475	32
	W	561e	24	612	18	572	32	572	32	538e	24	583	42	538e	24	538e	8	538e	24	481	24
	R-1	595	54	595	40	587	53	587	53	595	40	595	40	595	40	488	23	595	27	488	23
	R-2	566	17	561e	8	566	54	566	54	561e	8	566	17	455	8	492	3	455	18	488	34
	G-1	575	11	583	21	572	32	572	17	566	17	575	18	566	17	481	12	566	8	481	24
	G-2	587	53	587	68	575	30	575	30	583	42	575	48	587	35	478	11	587	35	478	41
	Y-1	575	48	538e	16	575	61	575	61	538e	24	575	48	538e	24	595	6	538e	16	478	32
	Y-2	575	30	498e	22	575	48	575	48	498e	22	575	30	575	48	595	6	575	30	478	32
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 3 RESPONSES	W	575	11	575	11	575	15	575	15	575	[illegible]	[illegible]	[illegible]	575	15	[illegible]	7	575	15	[illegible]	17
	W	575	48	575	30	572	32	572	47	575	30	575	48	575	30	538e	16	575	30	538e	16
	R-1	587	68	587	68	587	53	583	42	587	53	587	35	587	53	455	26	587	53	455	26
	R-2	583	42	561e	17	583	42	575	48	561e	17	455	8	455	8	455	4	455	8	455	18
	G-1	551	10	566	17	572	32	572	32	566	35	572	17	566	17	538e	8	566	17	498e	15
	G-2	572	11	572	11	572	17	572	32	572	11	572	17	572	11	538e	16	572	11	538e	32
	Y-1	575	48	575	30	575	48	575	61	575	30	575	48	538e	16	538e	4	538e	16	538e	16
	Y-2	575	48	575	30	575	48	575	48	575	30	498e	15	575	30	538e	4	575	30	561e	24
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 4 RESPONSES	W	[illegible]	[illegible]	[illegible]	[illegible]	575	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	538e	24
	W	561e	17	561e	17	595	40	595	54	455	18	595	40	455	18	595	27	455	18	538e	32
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	498e	30	595	40	498e	30
	R-2	498e	15	538e	8	493e	12	493e	12	455	8	498e	5	561e	8	561e	4	561e	8	538e	32
	G-1	551	10	551	10	572	32	572	32	566	35	572	32	551	10	575	18	551	10	493e	19
	G-2	575	11	575	11	575	30	575	30	575	11	575	18	575	11	498e	15	575	30	498e	22
	Y-1	575	48	561e	17	575	61	575	61	561e	17	575	61	575	48	538e	4	575	61	538e	32
	Y-2	575	61	575	48	575	61	575	61	575	48	575	61	575	61	595	12	575	48	538e	32
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 5 RESPONSES	W	575	[illegible]	[illegible]	18	[illegible]	15	[illegible]	[illegible]	575	[illegible]	[illegible]	[illegible]	[illegible]	32	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	24
	W	572	32	572	32	572	47	572	47	572	47	572	32	572	32	538e	32	572	32	538e	32
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	493e	19	587	53	493e	19
	R-2	595	27	561e	4	561e	4	561e	4	595	12	587	18	595	12	455	4	595	12	538e	32
	G-1	566	17	551	10	572	32	572	32	551	10	572	17	566	17	575	11	566	35	498e	15
	G-2	572	47	572	32	572	47	572	47	572	17	572	32	572	17	561e	31	572	32	561e	31
	Y-1	575	48	575	61	575	61	575	61	575	48	575	61	575	61	538e	4	575	48	538e	32
	Y-2	575	61	575	61	575	61	575	61	575	61	575	61	575	61	538e	32	575	61	538e	32

TABLE 79

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

		1		2		3		4		5		6		7		8		9		back	
		λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
PROJ.PR. No. 6	W	575	18	575	15	575	15	575	30	[illegible]	[illegible]	575	[illegible]	575	30	575	11	575	30	566	24
AMB. ILL. RESPONSES	W	575	48	575	30	572	32	572	47	575	30	575	48	575	30	566	24	575	30	566	24
	R-1	587	53	587	68	587	53	583	42	587	53	587	35	587	35	455	18	587	53	455	18
	R-2	575	30	583	42	575	30	575	30	566	17	583	21	478	11	478	5	478	11	478	22
	G-1	566	17	566	35	575	30	572	32	566	35	572	17	566	17	572	11	551	10	536	16
	G-2	572	11	572	11	572	32	572	47	572	17	572	17	572	11	566	31	572	11	455	33
	Y-1	575	30	575	48	575	61	575	61	575	48	575	48	575	48	536	4	575	48	566	17
	Y-2	575	30	575	30	575	48	575	48	575	30	575	30	575	30	566	17	575	30	566	24
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 7	W	583	62	[illegible]	62	583	[illegible]	[illegible]	[illegible]	595	[illegible]	583	[illegible]	583	[illegible]	[illegible]	1	[illegible]	[illegible]	514	15
AMB. ILL. RESPONSES	W	587	53	595	40	587	53	583	62	595	40	595	40	595	40	572	17	612	28	492	18
	R-1	587	53	587	68	587	53	587	35	587	53	587	53	587	53	566	54	587	53	551	43
	R-2	595	27	595	40	595	27	587	35	587	35	583	42	587	35	514	2	587	35	499	13
	G-1	587	8	583	21	595	6	583	10	583	10	583	10	587	18	551	10	583	21	551	31
	G-2	587	53	587	65	587	35	587	35	587	35	587	35	587	53	551	31	587	35	551	43
	Y-1	551	5	587	53	583	62	551	5	595	40	595	54	612	28	499	3	612	28	492	18
	Y-2	587	35	595	27	587	35	587	35	595	27	595	27	587	35	514	2	587	35	514	15
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 8	W	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	583	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AMB. ILL. RESPONSES	W	587	35	595	27	583	42	595	27	612	18	595	27	595	27	572	17	595	27	551	5
	R-1	587	53	595	54	595	40	595	40	595	54	595	40	595	40	566	54	587	53	551	43
	R-2	595	27	595	12	587	35	587	35	587	18	587	18	595	27	551	5	595	27	551	10
	G-1	583	10	566	8	575	18	587	18	551	10	583	21	566	8	572	17	566	17	575	48
	G-2	583	21	583	21	583	62	583	42	583	21	583	42	583	10	583	10	583	42	572	17
	Y-1	583	42	587	18	583	42	583	16	587	35	583	42	595	27	551	5	595	27	514	5
	Y-2	583	42	587	35	595	21	595	27	587	35	583	42	595	27	551	5	595	27	551	20
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 9	W	566	17	566	17	566	17	566	17	566	17	566	17	566	17	566	4	566	17	566	4
AMB. ILL. RESPONSES	W	583	42	536	16	595	40	595	40	536	16	595	27	536	16	566	8	536	16	492	3
	R-1	587	35	587	35	587	35	587	35	587	35	587	35	587	35	566	17	587	35	566	17
	R-2	566	8	551	5	595	40	595	27	566	17	595	27	595	12	486	7	595	27	488	6
	G-1	551	5	551	10	575	18	575	30	551	10	587	18	551	10	575	18	551	5	575	18
	G-2	587	8	587	8	587	35	587	53	587	8	587	18	587	8	536	8	587	8	536	8
	Y-1	566	8	551	5	595	27	583	42	566	8	583	42	566	8	492	3	566	8	488	6
	Y-2	566	8	551	5	595	27	595	27	551	5	587	35	551	5	595	6	551	5	486	7
Chip		587	67	499	27	566	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ.PR. No. 10	W	499	3	499	3	499	3	499	3	499	3	499	3	499	3	499	6	499	3	499	3
AMB. ILL. RESPONSES	W	583	42	587	35	587	53	587	53	587	35	595	27	595	27	551	5	595	27	499	3
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	499	13	587	53	499	13
	R-2	536	15	566	17	566	8	566	17	536	16	536	24	612	18	492	3	612	18	486	7
	G-1	551	5	551	10	583	21	583	10	551	5	583	10	551	5	572	11	566	8	551	20
	G-2	587	8	587	8	587	35	587	35	587	8	587	35	587	8	551	20	587	35	551	20
	Y-1	566	8	583	21	587	18	595	12	566	8	587	18	595	27	488	6	587	35	488	6
	Y-2	566	8	536	4	595	27	595	27	587	35	583	42	587	35	595	6	587	35	486	13

TABLE 80

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

PROJ.PR. No.	AMB. ILL. / RESPONSES	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	514	2	514	2	514	2	514	2	514	2	514	2	514	2	514	5	514	2	514	5
	W	595	27	612	18	587	35	583	42	587	35	583	62	612	18	566	8	612	18	488	6
	R-1	587	53	587	68	587	53	587	53	587	68	587	53	587	68	551	31	587	53	551	31
	R-2	536c	16	536c	8	583	42	583	42	587	35	587	53	595	27	488	6	595	40	488	12
	G-1	566	8	566	8	583	21	583	21	566	8	587	18	583	10	572	11	566	8	566	35
	G-2	595	6	595	6	595	27	595	27	595	12	595	27	595	6	551	10	595	27	551	20
	Y-1	566	8	583	42	587	35	587	35	595	27	595	27	587	35	486	6	595	27	486	7
	Y-2	583	42	587	35	595	27	595	27	583	42	595	27	612	18	536c	4	612	18	492	9
	Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
12	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	566	17	583	42	566	35
	W	583	42	595	27	587	35	587	35	612	18	612	18	612	18	566	8	595	27	551	20
	R-1	587	35	587	53	587	35	587	35	587	53	587	35	587	53	566	54	587	53	551	43
	R-2	595	27	595	12	583	42	583	42	583	21	587	18	595	27	499	3	595	27	514	9
	G-1	583	10	566	8	583	42	583	42	551	10	583	21	583	21	572	17	566	8	572	47
	G-2	587	35	587	53	587	53	587	35	587	35	587	53	587	53	572	17	587	35	572	32
	Y-1	566	17	587	35	595	27	595	27	587	35	595	27	612	18	566	8	612	18	514	9
	Y-2	583	42	595	27	595	27	587	35	583	42	583	42	583	42	551	5	583	42	514	9
	Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13	W	566	8	566	8	583	42	583	42	566	8	583	21	583	10	566	17	566	8	566	17
	W	492c	12	612	11	595	40	595	40	492c	12	612	18	612	18	551	5	595	27	551	5
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	566	35	595	40	566	54
	R-2	536c	8	536c	4	536c	8	536c	8	561c	8	561c	4	536c	24	492	3	536c	24	499	6
	G-1	583	10	566	8	583	42	587	35	566	17	583	21	566	8	572	17	566	8	575	30
	G-2	595	6	595	6	595	27	595	40	595	6	595	27	595	12	572	17	595	12	572	47
	Y-1	566	8	595	27	595	40	595	40	587	35	595	27	612	28	566	8	612	18	551	5
	Y-2	566	8	455	4	612	28	612	28	492c	15	612	28	612	18	566	8	612	18	566	8
	Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	551	5	583	21	551	10
	W	595	27	612	28	595	40	595	40	612	28	587	53	612	25	566	8	612	28	551	10
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	566	35	595	40	566	54
	R-2	595	27	595	12	587	18	587	35	536c	16	536c	8	536c	16	551	5	536c	16	514	9
	G-1	583	10	566	8	587	18	595	12	583	21	587	18	583	10	575	18	583	10	566	54
	G-2	595	27	595	12	595	40	595	40	595	27	595	40	595	27	566	54	595	27	566	54
	Y-1	595	27	612	18	595	27	595	40	587	35	612	28	595	27	551	5	595	27	514	5
	Y-2	583	21	587	18	595	27	595	27	587	35	587	18	587	18	551	5	587	18	514	9
	Chip	587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	551	20	583	21	551	20
	W	587	35	612	18	612	28	295	21	612	18	612	18	612	28	566	17	612	28	514	5
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	54	595	54	551	43
	R-2	536c	16	536c	8	561c	24	561c	17	612	18	595	27	536c	16	551	5	536c	16	499	6
	G-1	583	21	551	5	583	42	583	21	583	21	583	21	583	10	575	18	583	10	566	54
	G-2	587	35	587	53	587	53	587	53	587	18	587	53	587	53	566	54	587	35	566	54
	Y-1	551	5	612	28	493c	19	493c	19	595	27	595	40	595	40	566	8	595	40	492	9
	Y-2	583	42	587	35	595	27	595	27	595	27	595	27	595	27	551	5	595	27	499	20

TABLE 81

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

PROJ. PR.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 16 (RESPONSES)	W	583	10	583	10	583	10	583	42	583	10	583	10	583	10	583	42	583	10	583	42
	W	612	18	583	21	595	27	595	27	587	18	595	12	587	18	455	8	587	18	587	18
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	575	30	595	40	572	47
	R-2	455	18	561e	17	538e	16	538e	16	561e	17	455	18	455	18	566	8	455	26	566	8
	G-1	587	18	566	17	583	21	587	18	499	6	583	21	566	8	575	18	551	10	583	78
	G-2	538e	4	538e	4	538e	16	538e	16	538e	4	538e	16	538e	8	583	42	538e	4	583	62
	Y-1	566	8	478	5	561e	17	561e	24	566	8	561e	17	561e	17	595	6	561e	17	587	8
	Y-2	583	21	538e	16	498e	15	498e	15	466	8	498e	15	566	8	583	10	566	8	583	10
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 17 (RESPONSES)	W	583	10	583	10	583	10	583	10	583	10	583	10	583	10	575	11	583	10	575	18
	W	595	12	455	18	595	27	612	18	561e	17	538e	16	538e	16	583	10	538e	16	583	21
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	575	30	595	40	572	32
	R-2	538e	8	561e	17	561e	24	561e	17	538e	16	561e	8	455	8	566	8	478	22	566	8
	G-1	583	10	587	8	587	18	583	21	551	5	566	8	587	8	575	18	551	5	583	62
	G-2	561e	4	561e	17	561e	17	561e	17	561e	4	561e	17	561e	8	575	30	561e	17	575	48
	Y-1	566	8	561e	17	561e	31	561e	24	561e	31	561e	17	561e	17	551	5	561e	17	583	10
	Y-2	498e	5	551	5	538e	16	538e	16	455	4	538e	16	538e	16	566	8	538e	16	583	10
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 18 (RESPONSES)	W	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	18
	W	561e	8	455	18	455	18	538e	16	561e	24	538e	16	538e	16	566	8	538e	16	566	8
	R-1	595	40	595	40	595	40	595	40	595	40	595	40	595	40	566	35	595	40	551	31
	R-2	561e	17	561e	8	561e	17	561e	17	455	8	455	18	455	26	566	8	455	18	566	8
	G-1	583	21	551	5	583	21	583	21	514	5	551	5	551	5	575	18	551	5	583	42
	G-2	455	4	455	4	455	4	455	4	455	4	455	4	455	1	572	17	455	4	572	32
	Y-1	551	5	612	18	561e	17	561e	17	612	18	583	42	583	24	551	5	538e	24	499	3
	Y-2	561e	17	583	21	538e	16	538e	8	612	18	493e	12	538e	16	566	8	538e	16	566	8
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 19 (RESPONSES)	W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	27	595	6	595	40
	W	538e	16	455	8	455	26	455	18	478	5	478	22	455	18	595	6	455	18	595	54
	R-1	595	27	595	27	595	27	595	27	595	27	595	27	595	27	595	54	595	27	595	54
	R-2	587	18	595	12	561e	8	561e	8	561e	17	455	18	587	18	612	4	587	18	612	18
	G-1	514	5	514	5	551	10	514	2	499	3	551	10	514	5	595	12	551	10	595	54
	G-2	493e	3	493e	3	493e	3	493e	3	493e	3	493e	3	493e	3	493e	19	493e	3	493e	26
	Y-1	455	8	566	8	478	22	478	22	551	5	478	22	561e	8	595	6	561e	8	595	54
	Y-2	566	8	481	6	455	4	566	8	538e	4	481	6	566	8	595	54	566	8	595	54
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 20 (RESPONSES)	W	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	27	595	12	595	27
	W	478	11	455	8	478	22	478	22	481	12	481	24	481	12	595	6	478	11	595	27
	R-1	587	53	587	53	587	35	587	11	587	53	587	53	587	53	566	8	583	62	551	5
	R-2	481	12	478	11	478	22	478	22	561e	17	561e	17	486	25	486	7	486	13	612	4
	G-1	551	5	551	10	514	2	492	9	499	3	492	3	514	2	583	21	566	8	595	40
	G-2	481	12	481	12	481	12	481	12	481	12	481	12	481	12	587	35	481	12	587	35
	Y-1	566	8	[illegible]	ok	486	37	486	37	481	6	486	25	538e	16	486	13	561e	17	595	27
	Y-2	455	8	455	4	481	24	486	25	481	24	481	6	481	6	612	4	481	6	612	18

TABLE 82

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
21	W	566c	4	566c	4	566c	4	566c	4	566c	4	566c	4	566c	4	566c	4	566c	4	566c	4
	W	587	18	455	8	486	25	486	25	455	18	486	25	486	25	595	6	566c	17	595	6
	R-1	587	53	587	53	587	35	587	35	587	53	587	53	587	53	551	5	587	53	551	5
	R-2	612	9	612	4	498c	5	486	25	538c	16	566c	17	566c	17	481	6	566c	24	481	6
	G-1	492	3	488	6	492	9	492	9	492	3	514	2	551	5	583	21	566	8	583	42
	G-2	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	30
	Y-1	566	8	551	5	486	13	486	25	566c	17	488	12	566c	17	486	7	566c	17	595	6
	Y-2	538c	8	538c	4	481	6	481	24	538c	8	481	12	538c	4	612	4	538c	4	612	4
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
22	W	575	30	575	30	575	30	575	18	575	30	575	30	575	30	566c	17	575	30	566c	17
	W	575	48	575	30	566c	24	566c	24	575	48	575	30	575	48	566c	17	575	30	566c	24
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	566c	24	587	53	566c	24
	R-2	455	33	583	42	455	33	455	33	455	8	455	18	583	42	455	4	583	21	455	26
	G-1	551	5	566	17	486	7	486	7	566	17	488	12	566	17	566c	4	566	17	538c	16
	G-2	572	32	572	32	572	17	566c	8	572	32	572	17	572	17	566c	31	572	17	566c	31
	Y-1	575	48	575	61	566c	17	566c	31	575	61	566c	24	575	61	566c	8	575	61	566c	24
	Y-2	566c	24	583	42	566c	24	566c	24	583	42	583	42	583	42	566c	4	583	42	566c	24
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
23	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	551	10	583	21	551	10
	W	583	42	587	35	551	5	551	10	587	35	583	42	583	42	492	3	575	27	488	12
	R-1	595	40	595	40	595	40	595	27	595	40	595	40	595	40	514	15	595	40	514	15
	R-2	583	42	587	35	583	62	455	18	566	8	566	17	595	27	488	6	575	27	488	34
	G-1	551	5	583	21	551	5	551	10	551	10	492	9	551	5	575	11	514	2	551	31
	G-2	583	10	583	42	583	21	566	17	583	21	583	21	583	62	566	35	583	42	566	54
	Y-1	566	8	583	62	566	8	566	8	583	42	583	42	587	35	488	6	587	35	486	25
	Y-2	566	8	583	21	566	8	455	4	583	42	583	21	583	42	583	10	583	42	612	18
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
24	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	566	35	583	21	566	35
	W	587	35	595	27	478	11	514	5	612	18	514	2	595	27	551	5	595	27	514	9
	R-1	587	53	595	54	595	40	595	27	595	54	595	40	595	40	551	31	595	40	551	31
	R-2	498c	15	538c	16	551	10	551	10	538c	16	595	27	538c	16	566	17	538c	16	499	6
	G-1	583	10	583	21	551	10	514	5	566	8	551	5	583	10	575	18	583	10	566	54
	G-2	583	10	583	42	583	10	566	17	583	42	583	10	583	62	566	35	583	42	551	31
	Y-1	583	42	587	35	583	42	566c	24	587	35	566c	17	587	35	492	3	587	35	499	6
	Y-2	566	8	587	35	583	42	583	21	595	27	587	35	583	42	551	5	583	42	514	9
Chip		587	67	499	27	561c	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
25	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	W	583	42	587	35	587	18	583	42	587	35	538c	16	538c	16	583	10	538c	16	566	8
	R-1	587	53	595	54	595	40	595	27	595	54	595	27	595	40	572	32	595	40	566	35
	R-2	612	18	498c	12	595	27	566	8	595	27	595	27	595	27	566	8	612	18	499	6
	G-1	587	8	583	10	595	12	583	21	551	10	583	21	551	5	575	18	566	8	583	62
	G-2	478	5	478	5	478	5	478	6	478	5	478	5	478	5	572	17	478	5	572	32
	Y-1	583	21	583	42	583	42	566c	17	583	21	587	18	566c	31	551	5	566c	24	551	5
	Y-2	566	8	587	18	587	8	538c	4	583	42	583	21	612	18	566	8	612	18	566	8

TABLE 83

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 14

PROJ.PR. No. 26

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	595	6	595	6	595	6	595	6	595	6	595	6	595	6	595	12	595	6	595	12
W	498e	15	561e	17	455	18	538e	24	538e	16	498e	15	498e	15	538e	4	538e	16	595	12
R-1	583	21	583	21	583	21	583	21	583	21	583	21	583	21	566	8	583	21	566	8
R-2	455	18	612	18	612	28	612	18	493e	12	493e	19	612	18	566	8	612	18	486	7
G-1	551	5	514	5	583	21	583	21	583	21	583	10	551	5	575	18	551	10	587	53
G-2	587	18	587	8	587	35	587	18	587	18	587	18	587	18	587	53	587	8	595	54
Y-1	566	8	455	18	561e	24	561e	31	551	5	561e	24	561e	17	486	7	561e	17	612	4
Y-2	566	8	551	5	538e	16	538e	24	551	5	538e	16	538e	16	566	8	538e	8	595	27
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No. 27

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W	561e	4	561e	4	561e	4	561e	4	561e	4	561e	4	561e	4	561e	4	561e	4	561e	4
W	612	9	493e	6	493e	12	612	18	498e	15	538e	24	538e	16	595	6	538e	24	595	6
R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	566	8	587	53	566	8
R-2	595	40	612	18	612	18	612	18	595	27	595	12	612	28	566	17	612	28	488	6
G-1	566	8	551	10	583	21	583	21	514	2	583	10	566	8	583	21	566	8	595	40
G-2	583	10	583	10	583	42	583	42	583	10	583	42	583	21	583	62	583	21	583	62
Y-1	566	8	612	18	583	42	493e	12	583	42	561e	17	561e	31	488	6	561e	24	488	6
Y-2	566	8	551	5	538e	8	538e	16	566	8	538e	16	538e	8	595	6	538e	8	595	6
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	

PROJ.PR. No.

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	White	

PROJ.PR. No.

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	White	

PROJ.PR. No.

AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				

TABLE 84

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

		1		2		3		4		5		6		7		8		9		back	
Proj. Pr.	Amb. Ill. (Responses)	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe	λ	Pe
No. 1	W	575	30	575	48	575	30	575	30	575	48	575	30	575	48	455	33	575	48	455	33
	W	572	32	575	61	572	47	572	47	575	61	572	32	572	60	566	24	572	60	455	26
	R-1	587	53	587	53	587	53	587	53	587	53	587	53	587	53	455	18	587	53	455	18
	R-2	566	17	black		566	24	455	18	black		455	18	575	48	455	8	575	48	455	40
	G-1	575	18	566	17	572	11	572	32	572	32	572	17	572	47	486	13	572	32	491	36
	G-2	575	48	575	61	575	30	575	30	575	48	575	30	575	18	575	18	575	48	455	33
	Y-1	575	48	575	61	575	30	575	48	575	61	575	30	575	61	566	31	575	61	455	33
	Y-2	575	48	575	61	575	30	575	41	575	61	575	30	575	61	595	6	575	61	455	26
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 2	W	575	48	575	48	575	30	575	30	575	48	575	30	575	48	455	26	575	48	455	33
	W	572	32	575	30	572	47	572	47	572	60	566	24	572	60	575	18	572	60	455	26
	R-1	595	40	595	54	595	27	595	27	595	40	595	27	595	27	451	36	595	27	451	36
	R-2	455	18	575	48	575	30	575	30	575	60	566	24	575	48	455	33	575	48	455	26
	G-1	486	7	572	32	572	32	566	17	572	47	575	18	566	35	478	11	572	32	481	24
	G-2	575	48	575	61	575	30	575	30	575	48	575	30	575	48	575	18	575	61	566	17
	Y-1	575	30	575	61	575	48	575	61	575	61	575	30	575	61	566	17	575	61	455	33
	Y-2	575	30	575	61	575	48	575	48	575	61	575	30	575	61	587	8	575	61	455	33
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 3	W	575	18	575	30	575	30	575	30	575	30	575	18	575	30	566	31	575	18	566	31
	W	575	30	575	61	575	48	575	45	575	30	566	24	575	45	556	8	572	60	556	24
	R-1	595	40	595	54	595	40	595	27	595	40	595	27	595	40	455	33	595	54	455	33
	R-2	455	8	583	62	583	42	575	48	575	30	455	18	575	48	455	4	575	48	455	33
	G-1	551	5	566	54	572	32	572	32	566	35	499	6	566	35	478	11	566	35	556	32
	G-2	572	32	572	17	572	17	572	32	572	32	572	32	572	17	566	8	572	17	566	24
	Y-1	575	30	575	61	575	48	575	48	575	61	575	30	575	61	566	17	575	61	566	31
	Y-2	575	30	575	61	575	30	575	48	575	61	575	30	575	61	595	6	575	61	566	31
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 4	W	572	17	572	17	572	17	572	32	572	17	572	17	572	17	566	31	572	32	566	31
	W	595	40	572	47	572	60	572	47	572	47	566	17	572	47	566	40	572	47	566	48
	R-1	587	53	587	53	587	35	587	35	587	53	587	35	587	53	456	30	587	35	456	30
	R-2	612	18	595	40	595	27	595	27	556	24	575	30	595	27	566	4	595	40	566	40
	G-1	514	2	566	35	572	17	572	32	566	35	492	9	566	35	566	8	566	35	496	26
	G-2	572	47	572	47	572	32	572	60	572	47	572	47	572	47	572	17	572	47	586	32
	Y-1	575	30	572	60	572	32	572	47	572	60	572	32	572	60	556	32	572	60	556	32
	Y-2	575	48	575	61	575	30	575	48	575	61	575	48	575	61	566	31	575	61	566	31
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 5	W	572	32	572	32	572	17	572	47	572	47	572	32	572	32	566	31	572	31	566	31
	W	575	30	575	40	575	30	572	47	572	60	572	32	572	60	556	40	572	60	556	48
	R-1	587	35	587	54	587	35	587	35	587	54	587	35	587	54	456	22	587	54	456	22
	R-2	455	26	583	62	583	42	583	42	575	60	575	30	583	62	566	4	583	42	566	48
	G-1	551	10	572	32	572	17	572	17	572	32	499	6	566	36	492	3	572	32	566	31
	G-2	572	47	572	60	572	32	572	47	572	60	572	32	572	60	556	32	572	47	556	32
	Y-1	572	30	572	60	572	47	572	47	572	60	572	32	572	60	566	31	572	60	566	31
	Y-2	575	30	575	61	575	48	575	61	575	61	575	48	575	61	556	4	575	61	556	31

TABLE 86

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair[15]

PROJ.PR.	AMB. ILL. (RESPONSES)	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 6	W	575	18	575	30	575	30	575	30	575	30	575	18	575	30	561c	24	575	30	561c	24
	W	572	32	572	47	572	32	572	47	572	66	572	32	572	47	561c	17	572	66	561c	31
	R-1	587	35	587	54	587	35	587	35	587	54	587	35	587	35	455	24	587	54	455	24
	R-2	575	48	575	60	572	47	572	47	572	60	583	42	575	27	455	4	575	48	455	33
	G-1	551	10	566	35	572	17	572	32	566	35	498	11	566	35	481	6	566	35	561c	31
	G-2	572	47	572	47	572	47	572	60	572	60	572	32	572	47	561c	24	572	60	561c	31
	Y-1	575	48	575	61	575	48	575	48	575	61	575	30	575	61	561c	17	575	61	561c	31
	Y-2	575	48	575	61	575	48	575	48	575	61	575	48	575	61	561c	31	575	61	561c	31
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 7	W	583	42	583	42	583	42	583	42	583	42	583	42	583	42	551	20	583	42	551	31
	W	595	27	595	40	587	35	587	35	595	27	587	35	595	27	492	9	595	40	488	23
	R-1	595	54	595	40	595	40	595	40	595	54	595	40	595	40	514	15	595	40	514	15
	R-2	566	17	595	40	566	35	566	35	black		566	35	595	40	499	3	595	40	499	40
	G-1	583	10	595	12	575	18	583	10	595	12	499	6	595	12	551	20	587	18	551	43
	G-2	587	35	587	53	587	35	587	35	587	68	587	35	587	53	514	5	587	53	514	15
	Y-1	566	8	595	40	566	8	583	42	595	40	566	8	595	54	492	18	595	52	492	36
	Y-2	583	42	595	40	583	42	583	42	612	28	583	42	595	27	492	20	612	28	514	20
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 8	W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	514	9	587	35	514	9
	W	566	16	612	28	595	27	595	27	612	28	587	35	612	25	566	8	612	28	499	13
	R-1	595	27	595	54	595	40	595	27	595	40	595	27	595	54	551	31	595	54	551	43
	R-2	583	42	583	21	566	17	566	8	612	28	566	17	595	40	492	3	595	40	492	18
	G-1	583	10	587	18	587	18	587	35	595	12	551	10	587	8	492	19	583	10	566	54
	G-2	595	12	595	40	595	12	595	12	595	27	595	12	595	12	551	5	595	27	551	20
	Y-1	583	42	587	53	595	40	595	40	587	53	583	42	587	53	486	13	587	53	488	23
	Y-2	583	42	595	27	587	35	595	27	612	18	587	35	612	18	499	3	612	18	499	20
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 9	W	566	17	566	17	566	17	566	17	566	17	566	17	566	17	566	8	566	17	566	8
	W	566	17	595	27	583	42	587	35	612	18	551	10	595	27	492	3	595	27	492	9
	R-1	595	27	595	40	595	27	595	27	595	40	595	27	595	27	551	31	595	40	551	31
	R-2	595	54	612	18	595	27	595	27	595	54	583	42	595	27	488	6	595	27	488	23
	G-1	499	6	583	10	595	12	583	21	587	8	551	10	583	10	492	9	587	18	551	31
	G-2	566	8	566	8	566	8	587	35	566	54	572	11	566	54	499	13	566	17	499	13
	Y-1	583	21	587	35	595	27	612	18	587	35	583	21	587	35	486	13	587	35	486	25
	Y-2	583	21	595	27	587	35	595	27	595	27	583	21	595	27	595	6	595	27	488	23
Chip		587	67	499	27	561o	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 10	W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	499	13	587	35	499	13
	W	587	35	595	27	583	42	587	35	595	40	583	42	587	53	455	6	595	27	486	25
	R-1	595	46	595	54	595	40	595	40	595	54	595	40	595	40	514	9	595	54	514	9
	R-2	595	27	595	40	595	27	595	27	612	37	612	28	595	27	488	6	595	17	488	23
	G-1	488	6	583	10	612	9	595	12	595	12	583	10	587	18	481	6	595	12	514	5
	G-2	566	17	566	35	566	8	566	8	566	35	572	11	566	35	499	27	566	17	499	27
	Y-1	612	18	587	35	595	21	486	15	583	42	612	9	587	35	486	7	587	35	488	23
	Y-2	587	35	595	40	587	35	595	27	595	40	583	42	595	27	486	4	595	27	488	34

TABLE 86

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

PROJ.PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
11	W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	499	13	587	35	499	13
	W	595	27	612	18	587	35	587	35	612	18	583	42	595	27	492	3	595	27	488	23
	R-1	595	27	595	54	595	40	595	40	595	54	595	40	595	54	514	9	595	54	514	15
	R-2	566	8	595	40	587	53	587	35	595	40	595	27	595	27	575	6	575	27	492	18
	G-1	587	8	595	12	612	9	612	9	587	18	551	8	587	18	499	6	587	18	551	21
	G-2	587	11	587	53	587	18	587	18	587	35	587	8	587	35	514	9	587	18	514	15
	Y-1	566	8	587	35	5860	8	595	12	587	35	612	18	583	42	486	13	583	42	488	34
	Y-2	583	42	595	40	583	42	587	35	595	27	587	35	595	27	566	8	595	27	492	27
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
12	W	587	35	587	35	587	35	587	35	587	35	587	35	587	35	499	13	587	35	499	13
	W	595	27	587	53	583	62	587	53	612	25	551	20	612	28	566	8	612	28	514	15
	R-1	587	53	595	54	587	53	587	53	595	54	587	58	595	54	566	54	595	54	551	50
	R-2	566	17	595	27	566	17	566	17	612	27	566	32	595	40	566	8	595	40	514	30
	G-1	566	8	587	8	595	12	595	27	587	18	566	17	583	21	551	20	583	21	566	54
	G-2	595	12	595	40	595	12	595	27	595	40	595	12	595	40	566	17	595	27	566	54
	Y-1	583	42	612	28	587	35	595	27	612	37	566	8	492	26	566	8	492	26	551	43
	Y-2	587	18	612	28	587	35	587	18	612	28	566	17	612	28	514	9	612	28	514	20
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
13	W	587	18	587	35	583	42	583	42	587	35	583	42	587	35	566	17	587	35	566	17
	W	587	35	612	28	587	53	595	40	612	28	583	62	612	28	551	5	612	28	514	9
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	35	595	54	551	50
	R-2	566	8	595	40	566	17	566	17	612	27	566	32	612	27	514	5	612	29	514	15
	G-1	566	8	583	21	587	18	587	35	587	18	566	17	583	21	566	35	583	21	566	54
	G-2	595	12	595	27	595	12	587	53	595	54	595	12	595	40	566	54	595	27	566	54
	Y-1	566	8	612	28	587	35	595	27	612	28	566	8	612	37	551	6	612	37	514	9
	Y-2	587	35	612	28	587	35	492	26	595	27	566	17	612	28	566	8	612	28	514	15
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
14	W	587	53	587	53	587	53	587	53	587	53	587	53	587	53	551	31	587	53	551	43
	W	492	12	595	40	492	12	492	19	595	40	583	62	612	28	551	5	612	28	514	9
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	54	595	54	551	50
	R-2	595	28	612	28	612	18	612	18	612	37	566	35	612	37	551	5	612	37	551	31
	G-1	566	8	587	18	587	8	583	10	595	12	566	8	587	18	551	20	587	18	566	54
	G-2	612	9	612	28	612	9	612	9	612	28	612	9	612	28	551	20	612	28	551	43
	Y-1	566	8	595	40	612	18	595	27	595	54	566	8	595	40	551	5	595	40	514	9
	Y-2	583	42	612	28	595	40	595	40	612	28	566	17	612	37	566	8	612	37	514	20
Chip		587	67	499	27	5610	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
15	W	587	35	587	53	587	35	587	35	587	53	587	35	587	53	551	20	587	53	551	31
	W	595	27	492	12	587	53	595	40	612	28	583	62	492	19	566	17	492	19	514	15
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	35	595	54	499	40
	R-2	595	27	612	37	595	27	595	27	492	26	566	35	612	28	514	5	612	27	514	15
	G-1	566	17	583	21	583	21	595	12	595	12	551	10	583	21	551	10	587	18	566	54
	G-2	587	18	587	68	587	18	587	53	587	68	587	18	587	53	551	20	587	35	551	21
	Y-1	595	27	595	54	595	27	612	18	612	37	566	8	612	37	551	5	612	37	499	20
	Y-2	587	35	595	40	583	42	587	35	595	40	551	10	612	28	492	3	612	28	514	20

TABLE P7

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

PROJ. PR. No.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
16 (RESPONSES)	W	583	10	583	21	583	42	583	42	583	21	583	10	583	10	575	18	583	10	575	30
	W	561c	17	561c	4	561c	17	561c	17	561c	17	561c	24	561c	24	561c	24	561c	24	583	62
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	572	17	595	54	572	47
	R-2	595	12	595	6	595	27	595	12	595	6	455	8	493c	12	566	8	492c	12	566	17
	G-1	583	21	595	6	583	21	583	21	499	3	583	42	492	3	583	42	499	3	583	78
	G-2	538c	4	538c	4	538c	4	538c	4	538c	4	538c	4	538c	4	575	48	538c	4	575	61
	Y-1	583	21	587	18	566	17	538c	24	538c	16	566	17	538c	16	499	3	538c	16	587	8
	Y-2	498c	5	538c	16	498c	15	498c	15	498c	16	566	8	538c	16	572	17	538c	16	575	48
Chip		587	67	499	27	561c	31	455	33	492	36	612	57	486	57	575	61	551	40	WHITE	
17 (RESPONSES)	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	32
	W	561c	31	455	4	561c	31	561c	31	561c	17	561c	31	561c	31	583	10	561c	24	561c	8
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	575	18	595	54	572	47
	R-2	561c	17	492c	19	561c	17	561c	17	black		561c	17	561c	24	566	8	561c	24	566	17
	G-1	583	10	595	6	612	9	612	9	551	5	583	21	499	3	575	30	514	2	583	78
	G-2	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	18	575	30
	Y-1	551	6	583	10	612	18	612	18	587	18	566	8	498c	12	566	8	498c	12	566	17
	Y-2	583	21	587	35	498c	15	498c	15	538c	16	583	42	498c	15	572	17	498c	15	572	47
Chip		587	67	499	27	561c	31	455	33	492	36	612	57	486	57	575	61	551	40	WHITE	
18 (RESPONSES)	W	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17
	W	561c	31	561c	31	561c	31	561c	31	561c	17	561c	31	561c	31	566	8	561c	31	566	8
	R-1	595	27	595	54	595	27	595	27	595	54	595	27	595	54	566	17	595	54	566	54
	R-2	561c	8	561c	17	561c	24	561c	24	561c	24	561c	17	561c	17	566	8	561c	17	551	5
	G-1	583	10	514	2	583	10	583	10	514	2	583	21	481	6	575	30	481	6	583	78
	G-2	572	17	572	17	572	17	572	17	572	17	572	17	572	17	572	32	572	17	572	47
	Y-1	566	8	612	18	566	17	566	17	612	18	566	17	612	18	551	5	612	18	566	8
	Y-2	498c	5	498c	15	538c	16	538c	16	538c	24	498c	15	498c	15	572	17	498c	15	566	8
Chip		587	67	499	27	561c	31	455	33	492	36	612	57	486	57	575	61	551	40	WHITE	
19 (RESPONSES)	W	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	54
	W	538c	16	black		561c	17	561c	17	black		[illegible]	[illegible]	551	5	595	12	551	5	612	37
	R-1	595	12	595	12	595	12	595	12	595	12	595	12	595	12	575	54	595	12	595	54
	R-2	561c	17	561c	8	561c	17	455	18	black		455	26	black		612	4	black		612	50
	G-1	583	10	514	5	595	18	566	17	499	3	583	21	551	5	595	12	514	2		
	G-2	499	3	514	5	514	2	551	10	514	2	514	2	551	10	587	53	587	5	587	68
	Y-1	455	8	black		455	26	455	26	black		455	26	black		595	27	black		595	54
	Y-2	566	24	566	8	455	18	455	26	566	8	455	18	566	8	595	54	566	8	595	54
Chip		587	67	499	27	561c	31	455	33	492	36	612	57	486	57	575	61	551	40	WHITE	
20 (RESPONSES)	W	595	12	595	12	595	12	595	12	595	12	595	12	595	12	595	27	595	12	595	27
	W	455	18	black		455	18	455	18	black		561c	24	455	4	561c	5	455	4	595	40
	R-1	595	22	595	27	595	12	595	6	595	27	595	27	595	12	575	30	595	12	575	30
	R-2	455	4	455	17	455	24	455	33	561c	17	561c	17	481	12	612	4	481	24	612	4
	G-1	612	9	551	10	583	10	551	5	514	5	578	18	514	2	612	18	551	10		
	G-2	566	17	566	8	566	35	566	35	566	17	566	8	566	17	595	40	566	17	595	54
	Y-1	481	12	black		455	26	481	12	black		455	26	566	8	595	27	black		595	27
	Y-2	566	8	455	4	455	18	455	18	455	4	455	18	455	4	595	40	455	4	595	40

TABLE P9

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

PROJ. PR. No. / AMB. ILL. (RESPONSES)	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
PROJ. PR. No. 26																				
W	56k	4	56k	4	56k	4	583	42	56k	4	56k	4	56k	4	56k	17	56k	4	56k	17
W	583	21	587	18	56k	24	56k	31	587	18	56k	24	587	18	481	6	587	18	595	6
R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	8	595	54	566	8
R-2	49k	22	612	37	49k	15	49k	15	612	27	566	35	612	27	514	5	612	27	519	5
G-1	583	10	566	8	583	10	587	18	514	2	583	10	551	6	575	18	551	5		
G-2	583	21	583	21	583	21	583	21	583	21	583	21	583	21	583	42	583	21	583	62
Y-1	566	8	583	42	583	21	595	27	587	35	481	12	583	42	486	7	583	21	486	7
Y-2	486	13	587	18	58k	16	58k	16	587	35	455	18	583	42	489	6	583	21	612	4
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No. 27																				
W	56k	4	56k	4	56k	4	56k	4	56k	4	56k	4	56k	4	56k	4	56k	4	56k	4
W	583	21	587	18	583	21	612	18	587	18	56k	24	587	18	56k	4	587	18	557	5
R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	551	5	595	54	557	5
R-2	56k	24	612	27	56k	17	612	27	595	54	551	20	612	27	551	5	612	27	551	5
G-1	514	2	551	6	575	18	583	10	514	2	583	21	514	2	583	21	551	10		
G-2	575	11	575	11	575	11	575	11	575	11	575	11	575	11	575	18	575	11	575	30
Y-1	583	21	583	42	587	18	612	18	583	42	56k	16	583	42	486	7	583	42	492	3
Y-2	551	5	583	42	587	35	587	35	583	42	455	8	583	42	486	7	583	42	455	4
Chip	587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
PROJ. PR. No.																				
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	56k	31	455	33	492	36	612	37	486	37	575	61	551	40	White	
PROJ. PR. No.																				
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				
Chip	587	67	499	27	56k	31	455	33	492	36	612	37	486	37	575	61	551	40	White	
PROJ. PR. No.																				
W																				
W																				
R-1																				
R-2																				
G-1																				
G-2																				
Y-1																				
Y-2																				

TABLE 88

Wavelength (λ) and Excitation Purity (Pe): Narrowband Slide Pair 15

PROJ.PR.	AMB. ILL.	1 λ	1 Pe	2 λ	2 Pe	3 λ	3 Pe	4 λ	4 Pe	5 λ	5 Pe	6 λ	6 Pe	7 λ	7 Pe	8 λ	8 Pe	9 λ	9 Pe	back λ	back Pe
No. 21 RESPONSES	W	561c	4	561c	4	561c	4	561c	14	561c	4	561c	4	561c	4	561c	24	561c	4	561c	24
	W	561c	24	black		492	19	481	24	black		561c	24	455	18	595	6	455	18	595	12
	R-1	587	35	587	18	587	18	587	8	587	18	587	18	587	8	572	11	587	8	572	11
	R-2	455	18	455	28	455	18	455	28	455	18	455	18	455	18	561c	4	455	18	492	4
	G-1	551	5	551	10	514	2	551	5	514	5	492	3	514	5	587	18	551	5		
	G-2	551	5	551	5	551	5	551	5	551	5	551	5	551	5	492c	26	551	5	492c	26
	Y-1	561c	8	455	4	481	24	481	36	481	12	561c	17	481	12	595	6	595	12	595	6
	Y-2	561c	17	455	4	486	7	486	13	455	4	486	13	486	7	595	6	486	7	612	4
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 22 RESPONSES	W	572	47	572	47	572	47	572	47	572	47	572	47	572	47	455	18	572	47	455	18
	W	575	30	575	48	561c	24	561c	24	575	48	561c	24	575	48	[illegible]	4	575	48	561c	17
	R-1	538c	16	595	40	538c	24	538c	24	595	40	538c	16	595	40	481	12	595	40	481	12
	R-2	583	42	538c	8	538c	16	538c	24	583	10	583	62	583	21	481	4	483	42	481	24
	G-1	566	17	566	17	488	12	488	12	551	10	575	11	566	8	531c	8	566	17		
	G-2	538c	4	538c	4	538c	4	538c	4	538c	4	538c	4	538c	4	561c	31	538c	4	561c	31
	Y-1	575	30	575	61	561c	24	561c	31	575	61	561c	24	575	61	561c	8	575	61	455	18
	Y-2	583	42	587	35	561c	24	561c	24	587	35	561c	24	587	35	561c	17	587	35	561c	24
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 23 RESPONSES	W	499	3	499	3	499	3	499	3	499	3	499	3	499	3	499	12	499	3	499	13
	W	583	42	587	35	551	10	551	10	587	18	[illegible]	[illegible]	551	35	455	6	587	15	492	3
	R-1	583	42	595	54	595	27	595	27	595	40	595	27	595	40	574	15	595	40	574	20
	R-2	574	5	612	27	566	17	566	17	612	37	566	35	612	27	492	3	[illegible]	27	[illegible]	[illegible]
	G-1	587	18	595	6	587	18	551	10	514	9	583	10	551	10	572	11	514	2		
	G-2	566	8	566	8	572	11	566	17	566	8	572	11	566	8	551	10	566	17	551	10
	Y-1	566	17	583	42	583	21	583	21	583	42	583	24	583	42	486	7	583	42	488	6
	Y-2	583	21	587	35	583	21	455	18	583	42	583	21	587	35	481	6	587	35	486	7
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 24 RESPONSES	W	583	21	583	21	583	1	583	21	583	21	583	21	583	21	[illegible]	35	583	21	566	35
	W	583	21	595	27	566	8	566	5	612	15	[illegible]	[illegible]	[illegible]	27	566	8	595	27	492	6
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	551	20	595	54	574	30
	R-2	566	17	612	27	566	17	566	17	612	27	566	[illegible]	612	27	492	3	[illegible]	27	492	18
	G-1	583	10	583	21	566	8	566	17	481	6	583	10	514	2	575	18	566	8		
	G-2	566	35	566	17	572	11	566	17	566	17	572	11	566	35	566	54	566	17	566	54
	Y-1	566	17	587	35	566	17	538c	16	587	35	566	8	583	42	486	7	583	42	488	12
	Y-2	583	21	587	35	583	10	583	21	587	35	583	21	587	35	481	6	587	35	492	18
Chip		587	67	499	27	561e	31	455	33	492	36	612	37	486	37	575	61	551	40	WHITE	
No. 25 RESPONSES	W	583	21	583	21	583	21	583	21	583	21	583	21	583	21	572	11	583	21	572	17
	W	587	35	587	18	538c	24	587	15	612	18	595	27	595	27	[illegible]	3	595	27	566	8
	R-1	595	40	595	54	595	40	595	40	595	54	595	40	595	54	566	35	595	54	566	35
	R-2	595	27	612	27	595	27	595	27	612	18	551	10	612	27	551	5	612	27	551	5
	G-1	587	18	481	6	587	8	587	8	481	6	583	21	551	5	575	18	566	8		
	G-2	572	11	572	11	572	11	572	11	572	11	572	11	572	11	572	17	572	11	572	47
	Y-1	583	21	587	35	538c	16	583	21	587	18	538c	16	587	35	486	7	587	35	492	3
	Y-2	583	42	583	62	561c	17	561c	17	583	42	583	21	583	42	481	6	583	42	486	7

APPENDIX D

PROCEDURE FOR DETERMINATION OF PHYSICAL STIMULI PRODUCING RESPONSES IN TABLES 14 AND 15

For exact specification of stimuli required to produce the responses listed in Tables 14 and 15 the following procedure should be followed.

First, determine the pair of projection filters producing the responses from Table 14 or 15. Then, refer to the raw data in Appendix C under the projection conditions of interest to determine which chip (s) on which slide combinations result in the various responses. Finally, determine the densities of these chips on the slides in question from Table 2 (Broad Band) or Table 6 (Narrow Band). Thus any pair of slides having the same density combinations and projected through the same filters should produce the responses reported in Tables 14 and 15.

For example, Table 14, projection pair 1 produces responses of green, blue and yellow. Appendix C 1 reveals that:

1) green (551mμ) is the modal response to chip no. 1 with slide combination no. 1.

2) blue (455mμ) is the modal response to chip no. 3 with slide combination no. 1.

3) yellow (575mμ) is the modal response to chip no. 2 with slide combination no. 1.

It will be noted that these three responses are also produced by other chips and/or other slide combinations, however, for illustration only the three listed above will be considered.

Table 2 shows that for slide combination no. 1 (452.7mμ and 552.5mμ photographic filters) the three chips have the following densities:

	Density Slide 1	Density Slide 2
Chip 1 (551mμ GY)	1.96	1.13
Chip 2 (575mμ Y)	1.61	0.66
Chip 3 (486mμ B)	1.25	1.12
Background	0.79	0.58

Thus a pair of slides prepared having these densities and projected through the two filters used here will produce the three reported colors.